January Iron Output—Page 501

IRON TRADE REVIEW

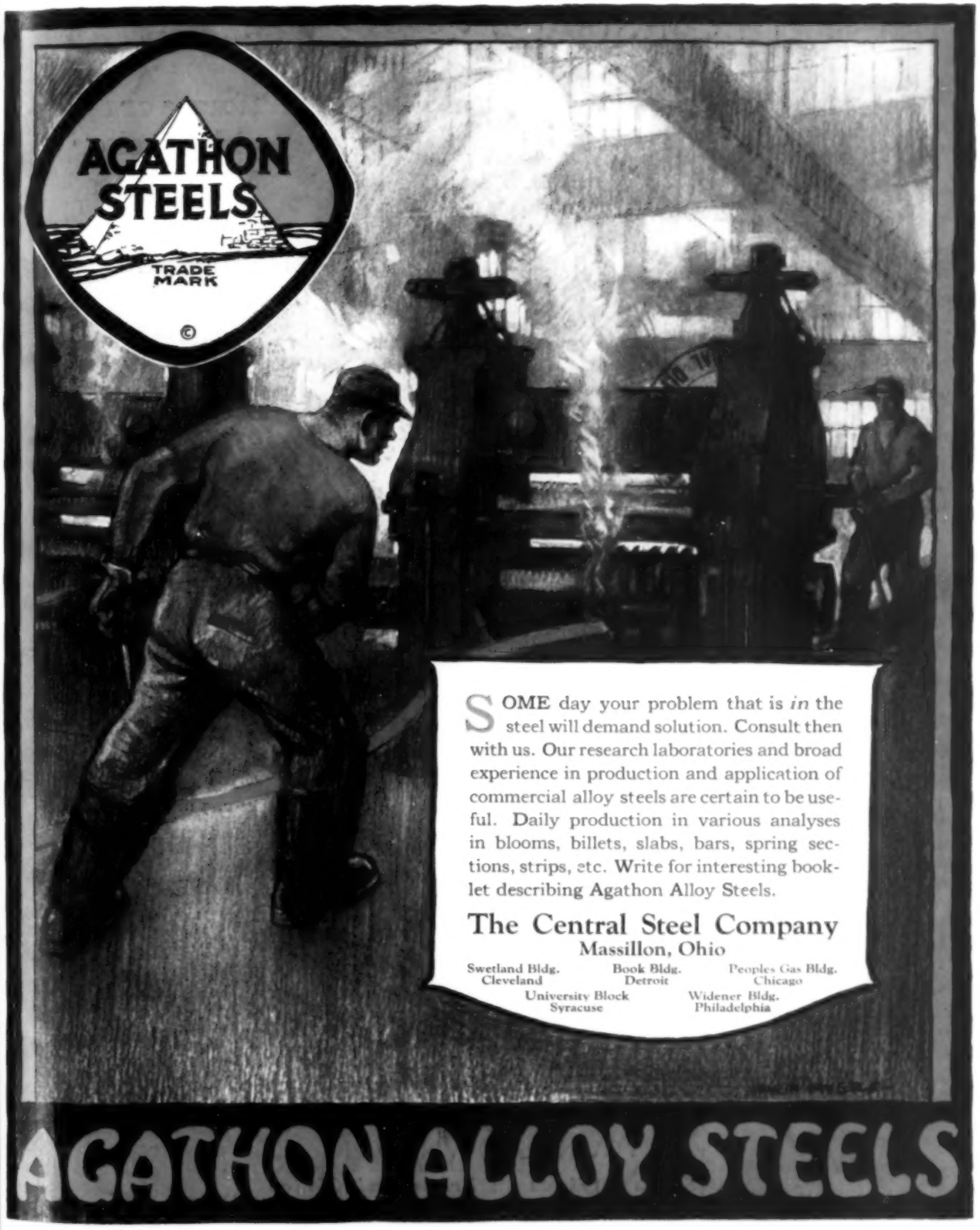
Registration Applied for

Published Weekly
VOL. LXXII. No. 7

CLEVELAND, O., FEBRUARY 15, 1923

Entered as second-class matter at the post-office in Cleveland, Ohio, under the act of March 3, 1879

Six Dollars a Year
Single Copy 25 Cents



SOME day your problem that is *in* the steel will demand solution. Consult then with us. Our research laboratories and broad experience in production and application of commercial alloy steels are certain to be useful. Daily production in various analyses in blooms, billets, slabs, bars, spring sections, strips, etc. Write for interesting booklet describing Agathon Alloy Steels.

The Central Steel Company
Massillon, Ohio

Swetland Bldg. Cleveland
Book Bldg. Detroit
Peoples Gas Bldg. Chicago
University Block Syracuse
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AGATHON ALLOY STEELS

TRUSCON ALLOY STEEL PLATFORMS AND BOXES

TRUSCON STEEL CO.

Conveyor Parts

(1) Conveyor Flights
(2) Conveyor Pans
(3) Conveyor Plates
(4) Elevator Buckets
(5) Weight Pans
(6) Oil Pans
(7) Oil Boxes

If it is pressed or formed from steel we can make it. We manufacture these products either in open hearth steel or Truscon Alloy Steel at customer's option.

Boxes

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(2) Scrap Boxes
(3) Shop Boxes
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(2) Three-piece Platform.
(3) Adjustable Height Platform.
(4) Combined Platform and Trailer Truck.
  (*a*) Four-caster type.
  (*b*) Two casters and two wheels.
  (*c*) Four fixed wheels.
  (*d*) Two fixed legs and two wheels.
(5) Loading Rack.

All of the above made for Elevator Truck Handling, also for other types of conveyor or handling or for a combination of any two or more of the above.

If it is pressed or formed from steel we can make it. Years of experience, complete equipment and a corps of specialists enable us to manufacture all types of pressed or deep drawn steel parts economically and efficiently. Get our estimates on the above; also on Foundry Flasks, Sewer Forms, Tunnel Liner Plates, etc.

TRUSCON STEEL COMPANY

YOUNGSTOWN, OHIO

Sales Offices in Principal Cities

Composite Market Record

Monthly Averages of Fourteen Iron and Steel Products, 1913-1923, Compiled by Iron Trade Review

1923	
Average for Jan.	$41.17
Jan. 31	41.61
Jan. 24	41.41
Jan. 17	41.13
Jan. 10	41.05
Jan. 3	40.67
1922	
December	40.53
November	42.08
October	43.60
September	43.79
August	39.79
July	37.50
June	36.96
May	36.49
April	34.42
March	32.97
February	32.86
January	33.35
Average for year	37.86
1921	
December	33.99
November	34.71
October	35.46
September	35.34
August	35.99
July	38.14
June	41.87
May	43.32
April	43.84
March	45.37
February	$48.81
January	51.98
Average for year	40.74
1920	
December	54.04
November	63.75
October	68.61
September	69.28
August	68.93
July	68.29
June	67.89
May	68.26
April	67.49
March	65.47
February	65.63
January	59.40
Average for year	65.59
1919	
December	54.88
November	51.28
October	48.76
September	48.35
August	48.27
July	47.85
June	47.88
May	48.29
April	48.45
March	52.28
February	53.71
January	53.81
Average for year	$50.32
1918	
December	57.24
November	55.67
October	57.53
September	56.56
August	56.67
July	56.66
June	56.62
May	56.59
April	56.59
March	56.71
February	56.67
January	56.67
Average for year	56.68
1917	
December	56.68
November	58.29
October	67.75
September	83.18
August	89.69
July	89.56
June	82.66
May	73.96
April	66.48
March	61.07
February	56.76
January	55.10
Average for year	70.10
1916	
December	$53.68
November	46.77
October	41.50
September	39.97
August	39.67
July	38.37
June	39.63
May	39.78
April	39.13
March	37.18
February	35.63
January	33.66
Average for year	40.50
1915	
December	31.56
November	28.64
October	26.19
September	25.55
August	24.77
July	24.25
June	23.74
May	22.89
April	22.66
March	22.71
February	22.21
January	21.90
Average for year	24.76
1914	
December	$21.58
November	23.39
October	22.84
September	23.17
August	22.73
July	22.17
June	22.58
May	22.99
April	23.39
March	23.60
February	23.52
January	23.03
Average for year	22.92
1913	
December	23.29
November	24.02
October	24.91
September	25.55
August	25.97
July	26.34
June	26.78
May	27.34
April	27.74
March	27.93
February	28.05
January	27.96
Average for year	26.32

West of the Mississippi

(Concluded from Page 470)

$50,000, and will be leased by the McCorkle Mfg. Co., 319 Twelfth street, this city.

SAN BERNARDINO, CAL.—The Santa Fe railroad has a building program involving the expenditure of $800,000. It includes a boiler and paint shop, a turntable, a tin and pipe shop and other structures.

SAN FRANCISCO—F. Grimley, 317 Front street, has awarded a contract for a 2-story building, 50 x 155 feet, to be devoted to the manufacture of cans, etc.

SAN FRANCISCO—The Mark-Lally Co., jobbers, plans the erection of a warehouse and office building in Los Angeles, to be 80 x 175 feet.

WICHITA, KANS.—The Benjamin Sibbitt Iron & Foundry Co. has purchased land, 90 x 132 feet, which it will utilize as a storage yard.

MINNEAPOLIS—The Diamond Steel Products Co. has been incorporated with $150,000 capital stock by George G. Bouthinon, John T. McCarthy and John Pirie.

KANSAS CITY, MO.—The plant of the Twin City Tractor Co. recently was damaged by fire.

MARTHASVILLE, MO.—The Marthasville Electric Light & Power Co. has been incorporated by F. H. Suhre, H. W. Deubbert and E. H. Koch.

SPRINGFIELD, MO.—The Larimore Hydraulic transmission Co., 620 Landers building, has been incorporated with $1,000,000 capital stock by J. E. Cahill, J. W. Miller, H. T. Lincoln and J. E. Carpenter.

ST. LOUIS—The Producers Metal Products Co. has been incorporated with $30,000 capital stock by H. C. Schaper, W. J. O'Day and A. C. Schaper.

ST. LOUIS—The Wood Hydraulic Hoist & Body Co. has been incorporated with $10,552 capital stock by C. A. Wood, C. D. Lynch and S. D. Callender.

ST. LOUIS—The Dean Metal Co. has been incorporated with $20,000 capital stock by E. G. Dean, L. Meinecke Jr., and William Deubel to manufacture metal specialties.

ST. LOUIS—W. B. Burgess, 1320 Marcus avenue, has organized the W. B. Burgess Co. with $30,000 capital stock to manufacture wire goods, etc. It takes over an existing business. Incorporators are W. B. and N. A. Burgess.

ARDMORE, OKLA.—The Consumers Light & Power Co is reported planning a plant.

ARDMORE, OKLA.—The Brooks Burner Stove Co. plans a 1-story plant building, 90 x 100 feet.

BLOSSOM, TEX.—The plant and machinery of the Blossom Oil & Cotton Co. recently was damaged by fire.

FT. WORTH, TEX.—The General Foundry Co. has been incorporated with $7000 capital stock by B. N. Wadley, R. A. Stewart and F. M. Stewart.

PORT NECHES, TEX.—G. H. Roberts and R. F. Taylor have leased the shipyard owned by Swailes, Hance & Rowlins Construction Co.

SAN ANTONIO, TEX.—The Runkle Gear Shifter Co. has been incorporated with $10,000 capital stock by E. S. Chandler, J. E. Crabb and Clarence Hees.

SAN ANTONIO, TEX.—The Mission Machine & Supply Co. has been incorporated with $15,000 capital stock by F. C. Boeck, A. A. Jacobson and H. N. Bettison.

PORT ANGELES, WASH.—The Angeles Foundry Co. plans a foundry building, 50 x 90 feet.

TACOMA, WASH.—The General Foundry Co. has been incorporated with $40,000. The company is represented by Stiles & Laycham, 426 Tacoma building.

Business in Canada

LONDON, ONT.—The London Shipping Containers, Ltd., has purchased land and will build an addition to its plant, 45 x 370 feet.

MOUNT DENNIS, ONT.—The Electroplax Co., Toronto, Ont., manufacturers of electrical supplies, etc., will erect a manufacturing plant here. H. M. Hyland, Weston, is engineer and H. E. Cory is general manager.

OTTAWA, ONT.—The Plumbing Specialty Co., Ltd., has been incorporated with $30,000 capital stock by Walter J. Gilhooly, John B. Mulvey and Walter McM. Heney.

TORONTO, ONT.—H. B. Johnstone & Co., Dundas street, will rebuild a factory recently damaged by fire.

TORONTO, ONT.—The Howe Sound Pulp & Paper Co., Ltd., has been incorporated with $5000 capital stock by John A. Kent, G. M. Jarvis and G. S. O'Brian.

TORONTO, ONT.—Webster-Inglis, Ltd., has been incorporated to manufacture machinery, etc., with $100,000 capital stock by Arthur W. Holmestead, D. L. Ross and L. V. Sutton.

TORONTO, ONT.—Bids will be called Feb. 10, for an addition to the plant of Cutten & Foster, Church street, manufacturers of automobile tops, etc. W. F. Sparling & Co., University avenue, Toronto, are the architects.

LAUZON, QUE.—The plant of the Davie Shipbuilding Co. recently was damaged by fire.

QUEBEC, QUE.—The Quebec Development Co., organized to develop water power on the Grand Discharge and Lake St. John, North of Quebec City, is calling for bids on power plant equipment, also equipment for pulp and paper mills for Price Brothers. It is proposed to install 12 turbines, each with a capacity of 35,000 horsepower, during the next four years.

IRON TRADE REVIEW
Registration Applied For
The Authority of Industry National and International
Vol. LXXII Cleveland, February 15, 1923 No. 7

Steel Congestion Is Increasing

Mills Find Greater Difficulty in Satisfying Demands for Material—Further Price Advances Put in Effect and Premiums Are Paid More Freely—Ingot Production in January Reaches Surprising Total

CONGESTION of the steel situation is increasing with the appearance of new demands in large volume and is reflected by the continued rise of prices and the difficulties of the producers to make their tonnage satisfy all needs being pressed upon them. Premiums now more freely are being paid to those mills able to furnish early material. Many tonnages continue to be refused because the desired shipment cannot be assured and as a result, some buying is being shut off. Larger mills are beginning to exert their influence against too rapid a rise of the market and as yet signs of feverishness are absent. Shortages of steel are keeping production in check and many mills including several of the Steel corporation subsidiaries are attempting with little success to satisfy these by open market purchases. At Youngstown 30,000 tons was inquired for this week with virtually nothing available even at higher offers of $40 especially for sheet bars.

Steel prices are going up steadily. Plates and shapes are up at least $2 this week with leading mills now naming 2.20c Pittsburgh minimum and steel bars are hardening at that level. At Chicago the advance in these products has been $3 to $5. Eastern mills continue to sell plates to the West at 2.40c to 2.50c mill. The American Steel & Wire Co. has gone up $2 on nails and $3 on fencing while a leading independent has put plain wire and nails $4 per ton above that. Strip is $3 to $5 higher.

IRON TRADE REVIEW composite of fourteen leading iron and steel products is up this week to $42.24 against $41.61 last week and $40.67 Jan. 3. The composite is now the highest since Nov. 15.

Steel Output Jumps

Steel ingot production in January sprang ahead surprisingly in view of restrictions on operations and reached a rate comparable with the high record output of the war period of 1917 and 1918. The daily average of output in January was exceeded by only a few months in the war period. Production of ingots in January was at the annual rate of 42,800,000 tons compared with an annual rate of 39,520,000 tons in December. This annual rate was 123 per cent greater than the production of 1921 and but 1.9 per cent below the high record year of 1917. The increase in steel output in January over December was 8.3 per cent as against that of 4.6 per cent in pig iron, indicating heavier scrap consumption now is being carried on.

Buying Iron Ahead

Heavier buying of pig iron for second quarter is developing. Sales for delivery by the Cleveland furnace interest serving various territories are in excess of 200,000 tons. At Chicago bookings of second quarter equal about half the production for that period. Prices though firm are not advancing generally. A leading Chicago seller now has raised to $30. Another round tonnage of basic closed in Northern Ohio puts the market more definitely at $26 valley.

Structural steel awards this week have dropped off to 20,430 tons but a conspicuous item is 10,000 tons placed for a power station for the Commonwealth Edison Co., Chicago. New business in oil tank work, however, has kept active. A Chicago independent mill has taken 17,000 tons of steel from three builders. The Petroleum Midway Co. has placed 6000 tons and three other companies are negotiating for 15,000 to 20,000 tons additional. At Pittsburgh a 9000-ton pipe line order was closed in the week.

Ruhr Steel Embargoed

An outstanding action in the Ruhr situation is the embargo on iron and steel and manufactured products from that territory to unoccupied Germany declared by the French cabinet. This may cause a shutdown of various German plants though the Berlin correspondent of IRON TRADE REVIEW states German engineering works are well supplied with iron and steel for several months. German iron and steel plants outside the Ruhr are maintaining production by importing British coal and coke.

As the result of these conditions British iron and steel prices are advancing rapidly and some signs of a runaway market are appearing. One effect has been to shut off sales of British pig iron to the United States. Holland is inquiring in this country for sheets as is also Japan which is offering $20 a ton more than it recently paid British producers.

Business Trend and Chart Section Page 501

IRON TRADE REVIEW

Registration Applied for

The Authority of Industry National and International

Published Every Thursday by

THE PENTON PUBLISHING CO., CLEVELAND, O.

Member, Audit Bureau of Circulations, Associated Business Papers, Inc., and National Publishers Association

BRANCH OFFICES

BOSTON - - - - - - - - - 426 Old South Bldg.
CHICAGO - - - - - - - - 1147 People's Gas Bldg.
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FOREIGN OFFICES

BIRMINGHAM, ENG. - - - - - - Prince's Chambers
LONDON, ENG. - 2-3 Caxton House, Westminster, S. W. 1.
PARIS, FRANCE - - - - - - - - 224 Rue de Rivoli

Cable Address, IROTRAPEN, London

Subscription, United States, Cuba and Mexico, $6 per year. Canada, $8.50 per year. Great Britain and other countries, £2:0:0 per year.

Entered at the Postoffice at Cleveland as Second Class Matter
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Progress in Iron Ore Industry

SUBSTANTIAL progress toward recovery in the Lake Superior iron ore trade, after the depression of 1921, is to be noted in the official record of shipments from that district during the past year. The tonnage in 1922 was 93 per cent larger than in the year preceding, though 12 per cent below the 10-year average. The present position of the industry indicates a shipment of around 55,000,000 tons this season, which if attained will be 22 per cent more than in 1922, or 5,000,000 tons over the average.

Five mines on the Mesabi range in 1922 shipped a gross tonnage of 11,013,221, slightly more than 25 per cent of all the ore forwarded from the Lake Superior district. Four of them were operated by the mining subsidiary of the United States Steel Corp., while the fifth, operated by independent interests, is that in which the Bethlehem Steel Corp. recently acquired one-half interest, the Mahoning, of the Mahoning Ore & Steel Co. Great concentration is shown by these figures, there having been 201 mines operated in 1922.

Practically all mines increased their shipments. The average for all of them is 218,856 tons, compared with 153,074 the year before. Ten new mines began shipping in 1922. The opening of five mines on the Mesabi range, two on the Menominee, two on the Gogebic and one on the Cuyuna range is a definite indication that possibilities in this direction have not been exhausted.

The shipments from the mines in which Bethlehem has acquired an interest through recent mergers total 4,356,918 tons, though this does not measure the yearly capacity of those properties. Included in the figure is a comparatively small lot from the magnetic iron ore sintering plant at the easterly tip of the Mesabi range, a plant which it has taken several years to build and which is just getting into operation on a large scale. The only other magnetic iron ore concentrating plant in the Lake Superior district also began shipping in 1922, this being a small project still in the formative stage on the Gogebic range.

The official record for 1922 as published in this issue of Iron Trade Review is strong evidence of the improvement in the iron and steel industry. The prospects for the industry in general may be gaged by the efforts which the mining companies are putting forth to meet the year's requirements. The fact that operations have been going forward throughout the winter on an extended scale and that they are being broadened as the shipping season approaches is an expression of confidence that 1923 will be a prosperous year.

Promoting Health in Industry

ONE of the important results of the safety campaigns as carried on in American industries during the past few years has been the forming of the "safety" habit among workers. Dangers have been pointed out so many times and the results of accidents emphasized so much that the employe instinctively thinks and acts "safety" while in the shop or mill.

Sometimes, however, one wonders whether this acquired discipline functions as well in the case of ordinary problems of health and sanitation as it does in regard to precautions against physical injury. Is it not likely that there are men who have carefully trained themselves ,to avoid accidents that might result in bad cuts or bruises but who carlessly allow a slight cold to develop into influenza or pneumonia? Too often the worker who scrupulously adheres to the letter of the safety rules, lays himself open to hazards just as severe as physical accidents by neglecting his health.

All industrial workers, and especially those who have not had an opportunity to learn the modern conception of sanitation, should be taught how to avoid the spreading of disease germs. The employer may spend thousands of dollars to provide pure drinking water, proper sanitary equipment, good lighting, satisfactory ventilation and other desirable working conditions, but this investment is wasted unless the em-

ployes know why these facilities are installed and are appreciative enough to employ them intelligently. This phase of the safety problem is handled authoritatively in the series on "Promoting Health in Industry," which began in the Jan. 25 issue of IRON TRADE REVIEW. Dr. Winslow's outline should serve as a guide to manufacturers desiring to improve the health of their employes.

Automobile Output, Industrial Marvel

SO AMAZING an exhibition of vigor as the automobile industry is displaying at this season has had few parallels in modern industrial history. Production of pleasure cars in the Detroit district at present is running from 10,000 to 11,000 daily and further increases are scheduled. The Detroit district is credited with about 85 per cent of the motor car plant capacity of the country. This means that automobile output of cars today is at the rate of considerably more than 3,000,000 cars. The highest record of production for a full year to the credit of the industry was approximately 2,570,000 cars in 1922.

Whether the present rate of activity in the industry can be maintained is an open question but the American automobile business has been in the habit lately of surprising its most sanguine enthusiasts and it may continue to do so. When it is considered, however, that the country today possesses one automobile to every 9 persons, it would require some exceptional optimism to put faith in a sustained market of the present scale.

Whatever the scope of the market may develop, however, it is a matter of real doubt whether the supply of steel of the special form and character required by the automobile industry will be available to permit the fullest production.

The automotive industry as a tonnage consumer of steel is not as large as at least three or four other groups and in 1922 it took directly 8.98 per cent of the country's output according to IRON TRADE REVIEW'S analysis. However, it is a predominating consumer of certain products taking last year for example 28 per cent of sheets and 21 per cent of merchant bars and it provides a large range of indirect requirements of steel the tonnage of which it is difficult to estimate. Hence the relationship of the prosperity of the automobile industry to that of the steel industry is a close one.

Moving Plants to the Country

MANUFACTURING plants, like people, migrate. Small plants start up in rural communities and as they grow in size they move, first to a nearby larger city, and finally to a metropolis like Chicago, Cleveland, or New York. The result of this is congested manufacturing districts, and the cry which was set up some years ago to get young men to return to the farm has now been changed to the new cry to take the plants from the congested metropolitan districts and move them to the young men in the country.

Many advantages follow the plant which moves from an urban to a rural location. Land values are usually so low that the plant is free to spread over as much ground as required for its efficient operation. Living conditions for the workers are greatly improved. A community spirit is possible which not only reduces labor turnover, but by increasing the general morale of the plant boosts the production per man. Some manufacturers feel that the value of this latter feature is hard to exaggerate, and that in most cases this alone would offset the disadvantages in distribution of the plant's product which are sometimes incurred by leaving the large city.

A map recently produced by the United States department of labor shows that in the East the greatest increase in immigration in 1922 was in the non-industrial states such as Maine and Vermont, and at the same time the greatest increase in emigration occurred in the industrial states such as Massachusetts and New Jersey. This may very plausibly explain the present labor shortage in industrial centers. It also emphasizes the growing desire on the part of immigrants to live away from the big cities.

The tide of migration of plants has turned, and progressive manufacturers are realizing that the welfare of employes often comes ahead of problems of distribution. With this in mind, they are moving to the country.

Invaluable Advice

in IRON TRADE REVIEW Missed By Many Men Who Need It, Reader Says

YOUR publication contains a lot of valuable information. The principal handicap, however, in getting this information to the man or men where it will do the most good, is the problem. There are many men in business that really need the education they might receive from this source. In these modern days, there are so many men who are ignorant of the vital things they ought to know. Whether this is because they lack interest or are mentally lazy, or do not realize the importance of such information, we do not know. Probably something of all three. The writer intends to put in more time studying your magazine.—*George L. Hastings, treasurer, Northern Hardware & Supply Co., Menominee, Mich.*

We are pleased to testify that IRON TRADE REVIEW in our opinion is a most satisfactory and reliable publication, one that usually gives the news straight—*A. C. Rulofson Co., San Francisco, Cal.*

We are using and consulting IRON TRADE REVIEW in regard to prices covering all steel commodities as the reports are always up-to-date and are authentic.—*F. J. Gartside, treasurer, Diamond Clamp & Flask Co., Richmond, Ind.*

Composite Market Average

Representing the Combined Average Prices per Ton of Fourteen Leading Iron and Steel Products, Yesterday, One Week, One Month, Three Months, One Year and Nine Years Ago

February 14, 1923	February 7, 1923	January, 1923	November, 1922	February, 1922	February, 1914
$42.24	$41.83	$41.17	$42.08	$32.86	$23.52

Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

SCRAP PRICES, PAGE 552, WAREHOUSE PAGE 544, ORE NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 548

Iron and Steel Prices

Pig Iron

Bessemer, valley	$28.00
Bessemer, Pittsburgh	29.77
Basic, valley	26.00
Basic, Pittsburgh	27.77
Basic, Buffalo	28.00
Basic, del., eastern Pa.	28.00 to 29.00
Malleable, valley	27.00 to 28.00
Malleable, Pittsburgh	28.77 to 29.77
Malleable, Chicago	29.50 to 30.00
Malleable, Buffalo furnace	28.50
Malleable, del., eastern Pa.	29.50 to 30.00

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.23
No. 2 Southern foundry	1.75 to 2.25
No. 2X East'n and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 to 3.25
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del., Phila.	31.13 to 32.13
No. 1X, Buffalo	29.00 to 30.00
No. 2 foundry, valley	27.00 to 28.00
No. 2 foundry, Pittsburgh	28.77 to 29.77
No. 2 foundry, Buffalo	28.00
No. 2 foundry, Chicago	29.50 to 30.00
No. 2 foundry, Granite City	30.00 to 31.00
No. 2 foundry, Ironton fur.	28.00
No. 2 foundry, Cleveland del.	29.50
No. 2 foundry, del., Phila.	28.76 to 29.13
No. 2 foundry, N. J. tidewater	29.13 to 29.76
No. 2X, eastern del., Phila.	29.76 to 30.13
No. 2X, east. N. J. tidewater	30.13 to 30.76
No. 2X, eastern del., Boston.	32.65 to 33.65
No. 2X foundry, Buffalo fur.	28.50 to 29.00
No. 2X, Buffalo del. Boston	33.41 to 34.41
No. 2 southern, Birminghma.	24.00 to 25.00
No. 2 southern, Cincinnati	28.05 to 29.05
No. 2 southern, Chicago	30.01 to 31.01
No. 2 southern, Philadelphia	31.80 to 32.80
No. 2 southern, Cleveland	30.01 to 31.01
No. 2 southern, Boston (rail)	33.61 to 34.61
No. 2 southern, St. Louis	29.17 to 30.17
No. 2X, Virginia furnace	27.50
No. 2X, Virginia Phila.	32.67
No. 2X, Virginia Jersey City	33.04
No. 2X, Virginia Boston	33.42
Gray forge, eastern Pa.	28.50 to 29.00
Gray forge, val. del.	27.77 to 28.77
Low phos., standard, valley	35.00 to 36.00
Low phos., standard, Phila.	Nominal
Low phos., Lebanon furnace	30.00
†Low phos. British tidewater	29.00 to 30.00
Charcoal, Birmingham	32.50 to 34.00
Charcoal, Superior, Chicago	33.13

Silvery Iron
Jackson County, Ohio, furnace

8 to 9 per cent	$36.50
9 to 10 per cent	38.50
10 to 11 per cent	40.50
11 to 12 per cent	43.50
12 per cent	45.50
13 per cent	48.00

Bessemer Ferrosilicon
Jackson County, Ohio, furnace

10 to 11 per cent	$45.50
11 to 12 per cent	48.80

Ferroalloys

Ferromanganese, 78 to 82 per cent domestic seaboard base	$107.50
Ferromanganese, delivered, Pittsburgh	$112.29
†Ferromanganese, 79 per cent, English, c.i.f. Atlantic port	107.50
Spiegel 19 to 21 per cent furnace	35.00 to 37.00
Ferrosilicon, 50 per cent contract freight allowed	82.50 to 87.50
Ferrotungsten, standard, per pound contained	85.00

†Duty paid.

Ferrochrome, 60 to 70 chromium, 4 to 6 carbon per pound contained, makers plant	13.00
Imported ferrochrome, 4 to 6 per cent carbon	12.00
Ferrovanadium, 30 to 40 per cent per pound estimated, according ton analysis	$3.50 to $4.00
Ferro carbon-titanium, carloads, producers plant, per net ton	$200.00

Coke

Beehive, Ovens

Connellsville furnace	$ 6.75 to 7.00
Connellsville foundry	8.50 to 9.00
Pocahontas furnace	nominal
Pocahontas foundry	nominal
New River furnace	9.50 to 10.00
New River foundry	11.50 to 12.50
Wise county furnace	7.50 to 8.50
Wise county foundry	8.50 to 9.50
Alabama furnace	7.00 to 7.50
Alabama foundry	8.00 to 8.50

By-Product

Foundry, Newark, N. J., del.	$12.84 to 12.91
Foundry, Chicago, ovens	15.00
Foundry, Boston, delivered	16.00
Foundry, Granite City, Ill., ovens	14.00
Foundry, Alabama	8.00 to 8.50

Semifinished Material

BILLETS AND BLOOMS
(4 x 4-inch)

Open-hearth, Pittsburgh	$38.50 to 40.00
Open-hearth, Youngstown	38.50 to 40.00
Open hearth, Philadelphia	45.17
Bessemer, Pittsburgh	38.50 to 40.00
Bessemer, Youngstown	38.50 to 40.00
Forging, Pittsburgh	47.50 to 50.00
Forging, Philadelphia	52.67

SHEET BARS

Open-hearth, Pittsburgh	$40.00 nominal
Open-hearth, Youngstown	40.00 nominal
Bessemer, Pittsburgh	40.00 nominal
Bessemer, Youngstown	40.00 nominal

SLABS

Pittsburgh	$38.50 to 40.00
Youngstown	38.50 to 40.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$47.50 to 50.00
Grooved skelp, Pittsburgh	2.10c to 2.25c
Universal skelp, Pittsburgh	2.10c to 2.25c
Sheared skelp, Pittsburgh	2.10c to 2.25c

Shapes, Plates and Bars

Structural shapes, Pittsburgh	2.20c to 2.25c
Structural shapes, Phila.	2.425c to 2.575c
Structural shapes, New York	2.44c to 2.69c
Structural shapes, Chicago	2.35c
Tank plates, Pittsburgh	2.20c to 2.25c
Tank plates, Philadelphia	2.425c to 2.675c
Tank plates, New York	2.44c to 2.59c
Tank plates, Chicago	2.35c to 2.45c
Bars, soft steel, Pittsburgh	2.10c to 2.25c
Bars, soft steel, Philadelphia	2.425c to 2.575c
Bars, soft tsele, New York	2.44c to 2.59c
Bars, soft steel, Chicago	2.25c
Bars, refined iron, Pittsburgh	2.75c
Bars, rail steel, Chicago	2.10c
Reinforcing bars, Pittsburgh	2.10c to 2.50c
Bar iron, common, Phila.	2.425c to 2.575c
Bar iron, common, New York	2.44c to 2.59c
Bar iron, common, Chicago	2.35c

Hoops, Bands, Shafting

Hoops, Pittsburgh, large	2.90c
Hoops, Pittsburgh, small	3.00c to 3.40c
Bands, Pittsburgh	2.90c
Cotton ties, per bundle, Pitts.	$1.17
Cold finished steel bars, Pittsburgh base	2.65c
Steel shafting	2.65c

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open hearth rails, mill	43.00
Relaying rails, St. Louis	27.00 to 37.50
Relaying rails, Pittsburgh	28.00 to 32.00
Light rails, 25 to 45, mill	2.15c to 2.25c
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.90c
Spikes, small and boat, Pitts.	3.50c
Spikes, railroad, Chicago	3.00c
Track bolts, Pittsburgh	3.85c to 4.50c
Track bolts, Chicago	4.00c
Tie plates, Pittsburgh	2.45c to 2.65c
Tie plates, Chicago	2.45c

Wire Products

100 lbs. to Jobbers in Carloads

Wire nails, Pittsburgh	2.80c to 3.00c
Plain wire, Pittsburgh	2.65c to 2.75c
Annealed wire, Pittsburgh	2.80c to 2.90c
Galvanized wire, No. 9 gage, Pittsburgh	3.15c to 3.35c
Barbed wire, painted, Pitts.	3.00c to 3.10c
Barbed wire, galv., Pittsburgh	3.35c to 3.45c
Polished staples, Pittsburgh	3.00c to 3.10c
Galvanized staples, Pittsburgh	3.35c to 3.45c
Coated nails, count keg, Pitts.	2.40c to 2.50c
Woven wire fencing (retailers)	66⅔ off
Woven wire fencing (jobbers)	69 off

Chain, Piling, Strip Steel

Chain, 1-in. proof coil, Pitts.	6.25c
Sheet piling base, Pittsburgh	2.15c to 2.30c
Hot rolled strip steel, Pittsburgh stamping quality	2.90c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base	4.75c

Sheets

SHEET MILL BLACK

No. 28, open-hearth, Pittsburgh	3.35c to 3.50c
No. 28, bessemer, Pittsburgh	3.35c to 3.50c
No. 28, open-hearth, Phila.	3.675c to 3.925c
No. 28, open-hearth, Chicago	3.59c to 3.69c

TIN MILL BLACK

No. 28, open-hearth, Pittsburgh	3.35c to 3.50c
No. 28, open-hearth, Chicago	3.69c

GALVANIZED

No. 28, open-hearth, Pittsburgh	4.35c to 4.75c
No 28 bessemer, Pittsburgh	4.35c to 4.75c
No. 28, open-hearth, Phila.	4.675c to 4.825c
No. 28, open-hearth, Chicago	4.64c to 4.69c

BLUE ANNEALED

No. 10, open-hearth, Pittsburgh	2.50c to 2.75c
No. 10, bessemer, Pittsburgh	2.50 to 2.75c
No. 10, open-hearth, Phila.	4.675c to 5.075c
No. 10, open-hearth, Chicago	2.84c to 2.89c

AUTOMOBILE SHEETS

No. 22 Pittsburgh	4.70c to 5.00c

Tin Plate

Per 100 lb. box.

Tin plate, coke base, Pitts.	$4.75

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	64	52½
1 to 1½-inch, butt iron	30	13

Boiler Tubes

Carload Discount 4 Points Larger

Steel, 3¼ to 13 inches, 1 c.	45 off
Charcoal iron, 3¼ to 4½ inches l. c.	11 off
Seamless hot rolled, 3¼ to 4-in. l. c.	1.42 off

Cast Iron Water Pipe

Class B Pipe

Four-inch, Chicago	57.20 to 57.70
Six-inch and over, Chicago	53.20 to 53.70
Four-inch, Birmingham	49.00 to 49.50
Six-inch and over, Birmingham	45.00 to 45.50
Four-inch, New York	62.30
Six-inch and over, New York	57.30
Three-inch, Birmingham	52.00 to 52.50

Class A pipe is $4 higher than Class B. Standard fittings, Birmingham, base, $110.00 6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Prices Present and Past

Representative market figures yesterday, and for last month, three months ago and one year ago

	Feb. 14. 1923	Jan. 1923	Nov. 1922	Feb. 1922
PIG IRON				
Bessemer, valley, del., Pitts....	$29.77	29.27	33.77	21.31
Basic valley	26.00	25.90	29.77	19.81
*No. 2 foundry, del. Pittsburgh.	28.77	28.77	30.17	20.96
*No. 2 foundry, Chicago	29.50	28.80	30.60	18.90
Lake Superior charcoal, Chicago	33.15	33.15	36.15	30.50
Malleable valley	27.50	27.75	29.60	19.00
Malleable, Chicago	29.50	28.80	30.60	18.90
*Southern No. 2, Birmingham..	24.00	23.30	24.00	15.35
*Southern Ohio, No. 2, Ironton..	28.00	27.90	29.75	19.25
Basic eastern del., eastern Pa..	28.00	27.70	28.00	19.84
**No. 2X, Virginia furnace	27.50	27.50	31.40	22.00
**No. 2X, eastern del. Phila....	29.76	29.56	30.50	21.35
Gray forge val. del., Pittsburgh..	27.77	27.77	29.77	20.96
Ferromanganese, del., Pittsburgh	112.29	109.79	104.92	65.32
SEMIFINISHED MATERIAL—				
Sheet bars, bessemer, Pittsburgh	40.00	37.50	38.80	29.00
Sheet bars, open-hearth, Pittsburgh	40.00	37.50	38.80	29.00
Billets, bessemer, Pittsburgh....	38.50	37.50	38.80	28.00
Billets, open-hearth, Pittsburgh..	38.50	37.50	38.80	28.00
FINISHED MATERIAL				
Steel bars, Pittsburgh.....	2.10	2.00	2.00	1.40
Steel bars, Chicago	2.25	2.08	2.00	1.52
Steel bars, Philadelphia	2.525	2.385	2.325	1.76

	Feb. 14. 1923	Dec. 1922	Oct. 1922	Jan. 1922
FINISHED MATERIAL Continued				
Iron bars, Philadelphia	$2.525	2.365	2.325	1.76
Iron bars, Chicago mills	2.50	2.35	2.50	1.60
Beams, Pittsburgh	2.20	2.05	2.00	1.40
Beams, Philadelphia	2.525	2.385	2.325	1.76
Beams, Chicago	2.35	2.18	2.10	1.52
Tank plates, Pittsburgh	2.20	2.05	2.00	1.40
Tank plates, Philadelphia	2.525	2.385	2.325	1.76
Tank plates, Chicago	2.35	2.18	2.10	1.52
Sheets, blk., No. 28, Pittsburgh.	3.35	3.35	3.35	3.00
Sheets, blue anl., No. 10, Pitts.	2.50	2.50	2.60	2.25
Sheets, galv., No. 28, Pittsburgh	4.35	4.35	4.35	4.00
Wire nails, Pittsburgh	2.80	2.70	2.70	2.45
COKE—				
Connellsville furnace, ovens	6.75	8.25	7.10	2.95
Connellsville foundry, ovens	8.00	9.00	8.40	3.80
OLD MATERIAL—				
Heavy melting steel, Pittsburgh..	23.50	21.65	20.40	13.95
Heavy melting steel, eastern Pa.	20.75	19.70	16.70	12.25
Heavy melting steel, Chicago ..	19.50	18.70	17.40	11.15
No. 1 wrought, eastern Pa.....	23.00	22.25	21.20	15.20
No. 1 wrought, Chicago	20.50	19.50	18.10	11.65
Rails for rolling, Chicago.....	21.50	20.50	18.90	11.50

*1.75 to 2.25 silicon **2.25 to 2.75 silicon

Second Quarter Iron Bought

Northern Ohio Interests Book in Excess of 200,000 Tons—Chicago Production Half Sold—Another Round Lot of Basic Sold at $26 Valley—Chicago Seller Advances to $30

Philadelphia, Feb. 13.—Pig iron buying is quiet but steady as generally consumers are using more iron than they expected. This is resulting in much additional first quarter buying. Some business has been placed for February-April delivery but practically no second quarter tonnage has been closed. Few consumers are inquiring for that period and the furnaces are not urging such sales as various producers believe higher prices are in sight, particularly because of the strong European situation. It is reported as likely here that American coal and pig iron shortly will be wanted by Europe. At any rate, it is regarded as unlikely that much more European iron will be brought to this country. Several instances have been noted lately where importers have been disappointed by the failure of foreign furnaces to ship iron as promised. Chief selling of domestic iron is of the foundry iron and some interest is shown in basic, particularly by the American Bridge Co. which has been buying steadily recently for its Pencoyd plant and is now considering a further tonnage. Sales of domestic low phosphorus iron the past week aggregate 2000 tons of copper bearing at $30, furnace. Moderate lots of English low phosphorus iron have been sold at $29.50 to $30, duty paid tidewater, this iron having been bought some time ago by importers. If it were purchased today at prices abroad it would have to bring over $31. Eastern Pennsylvania foundry iron is quoted at $28, base, furnace, plus $1 silicon differentials.

Second Quarter Business Active

Chicago, Feb. 13.—Active demand for pig iron for the second quarter continues. First quarter production is practically sold. Makers are taking prompt tonnages only after careful consideration as it is impossible to blow in more furnaces until fuel arrives by lake. A northern Illinois machinery maker is seeking 300 tons of foundry iron and a Chicago user wants 500 tons of charcoal iron, both for second quarter. Sales include 1000 tons of foundry iron to a Michigan melter; 500 tons of southern iron to a Michigan stovemaker and 1000 tons of malleable to a Michigan user, all for the second quarter. Inquiry is pending for 500 tons of standard bessemer iron for the Pittsburgh plant of a Chicago company. For Lake Superior charcoal iron there is fair inquiry and a price advance is expected. Demand for low phosphorus iron is moderately active. This grade is quoted $37 to $37.50, delivered, Chicago. Silveries are firmer, as electrolytic producers have advanced. Southern iron is steady at $25, Birmingham, quoted by most producers. Alabama iron delivered by waterway to Illinois is quoted at $28, Chicago, equivalent to $22 Birmingham.

A leading Chicago selling interest today advanced all grades of iron for all deliveries to $30 furnace.

Steelmaking Irons Stronger

Pittsburgh, Feb. 13.—Steelmaking pig iron is stronger this week. Several small lots of bessemer involving 100 to 200 tons have brought $28, valley. Basic, too, has advanced and

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the recent sale of two or more lots, one a round tonnage at $25, valley has brought about an increase of 50 cents since last week. Several inquiries now are current for basic iron, one for 4000 tons from the N. & G. Taylor Co., Cumberland, Md., for the next four months. Included among the several inquiries from other districts is a round tonnage from the Lalance & Grosjean Mfg. Co., Harrisburg, Pa., on which $26, valley, is being quoted. The Brakenridge, Pa. consumer apparently has satisfied its needs for the time being, some on a reciprocity basis with an Eastern Pennsylvania steelworks furnace. Only intermittent buying of small lots of foundry iron for prompt delivery is noted. The Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has closed on 200 tons of No. 1 foundry at $29, valley. The Westinghouse company also is understood to have bought several hundred tons of Nos. 2 and 3 for its Cleveland plant. A Detroit stove company recently closed on several thousand tons with a Cleveland interest at $29, furnace. Locally as low as $27, valley, continues to be done so that the market remains quotable at $27 to $28, valley, which likewise is the ruling spread on malleable. Some little interest is being manifested in second quarter requirements. Most producers, however, are postponing as long as possible the closing up of such business. A few are quoting a minimum of $27.50, valley. Valley producers have closed up several 400, 500 or 600-ton lots for second quarter delivery to Ohio points at $27.50, valley.

The Standard Sanitary Mfg. Co., is reported to be quietly obtaining quotations but will not be ready to close on its second quarter requirements for a week or two although it is understood now to be in the market for southern iron for both prompt and future delivery. Gray forge remains quotable at $26.50, valley, while low phosphous copper free iron still is quoted at a minimum of $35, valley.

Second Quarter Sales Heavy

Cleveland, Feb. 13.—Melters continue to close for large tonnages of pig iron for delivery in the second quarter. A number of important buyers in the Indiana and Michigan districts lately have covered their requirements and bookings by the various blast furnace interests represented in the northern Ohio group in the aggregate now are well above 200,000 tons. One interest took 25,000 to 30,000 tons in the past week, practically all of which is for the second quarter. A lot of 6000 tons of malleable for an automobile accessory manufacturer is included and other lots run from 1000 to 2000 tons. A great deal of buying has been done quietly in the last few weeks for the second quarter, and in some cities in Indiana consumers have practically covered for all of their needs for that period. Prices quoted by some makers show a decided advance over a week ago. Most of the 30,000 tons referred to went at $28.50, furnace, and the maker has now advanced the price for second quarter to $29 to $29.50, furnace, this representing an increase of $1 in a week. It is quoting $29.50 to $30, base furnace, on spot tonnages and has taken some tonnage at the higher level. Another furnace practically has withdrawn from the market for the second quarter after booking good tonnages for delivery in Cleveland and nearby territory. Some of these were closed at $29, base furnace, an increase of 50 cents. The Cleveland market is quotable at $29, furnace. A steady flow of inquiries for the second quarter is coming out and in the past week two or three were received for sizable tonnages for the third quarter. The interest receiving the latter declined to quote. Probably 15,000 tons is involved in inquiry pending at present. The Singer Mfg. Co. Elizabethport, N. J., has asked for 5000 tons for the second quarter and this tonnage is reported to have been closed with a stack in the East.

The Worthington Pump & Machinery Corp. is inquiring for 800 tons of foundry iron for second quarter delivery at Cincinnati; a central Ohio consumer for 500 tons of foundry iron; a northwestern Indiana user, for 250 to 400 tons of foundry for second quarter; a Cleveland melter, for 100 tons, and the American Locomotive Co. for 200 tons for Richmond, Va.

Further sales of basic iron have been made in the week. A northern Ohio furnace has closed for a large tonnage at $26, valley basis, with a nearby steelworks. The identity of the buyer has not been disclosed. A recent inquiry has involved 20,000 tons. The United Alloy Steel Co. Canton, which was inquiring two weeks ago for 5000 tons of basic also is understood to have closed.

Extended statistics of European iron and steel production, American iron and steel exports and imports, page 550

Eastern Furnaces Well Sold

Boston, Feb. 13.—Inquiry for second quarter pig iron is developing along larger lines and greater strength is evident in the entire eastern market. The eastern Pennsylvania furnaces which have been active in the recent trading are now well sold up for first quarter, and as a result are less anxious to take orders than earlier in the month. Prices below $28 at the furnace, eastern Pennsylvania, for the base grade 1.75 to 2.25 silicon have disappeared and several sales at $29.50 for No. 2X iron, 2.25 to 2.75, at eastern Pennsylvania furnaces have been made during the week. This means a delivered New England price of $33.15. In Buffalo some furnaces have been fluctuating between $27 and $28, furnace, and undoubtedly attractive business at present could be placed at the lower figure, or $31.91, delivered. Virginia iron for mixture purposes has sold at $27, furnace, or $32.92 delivered. Alabama furnaces are firm at $25. Foreign iron is offered at a wide range of prices depending upon conditions affecting each sale. Receipts of foreign iron during the week totaled 2651 tons. For future delivery $29, duty paid, Boston, is about the price, but spot tonnage because of transportation difficulties commands prices up to $32 or $33. Inquiry includes three lots of 300 tons each, one 2000 ton lot, and much other tonnage of a more or less indefinite nature. Conditions at present point to heavy buying for second quarter within the next week or ten days. Sales of the past week have been of small individual tonnages, but the aggregate holds up well with the previous two weeks.

Prices Stronger in East

New York, Feb. 13.—Buying of pig iron in this district is quiet but consistent, and sales of the past week aggregate close to 10,000 tons. Prices are stronger and the $27 figure seems to have disappeared on Buffalo foundry. The minimum now appears to be $28, base furnace, although the silicon differentials still vary from 50 cents to $1. Eastern Pennsylvania foundry iron is unchanged at $28, base furnace, plus $1 silicon differentials. Railroad embargoes continue to hold up deliveries of pig iron to many consuming points, particularly in New England. As a result, foreign iron is bringing higher prices in New England than in the New York and Philadelphia districts. Foreign iron imported at the port of Boston has been loaded into barges and shipped to other New England coastwise points and the prices done have ranged from $29.75 to $32.75, duty paid seaboard, depending on the grade of iron involved. Comparatively little Central Pennsylvania foundry continues to be sold in the East. This iron is being sold West at prices ranging from $27.50 to $29, base furnace, and in some cases $30, base furnace, has been obtained. Little Virginia foundry iron is being sold here. Virginia foundry continues on the basis of $27, furnace, plus 50-cent silicon differentials.

Prices in the foreign pig iron market are advancing further and one importer now wants $31.75, duty paid, for English guaranteed low-phosphorus iron. Some of this grade which previously had been purchased by importers probably still could be had at less. However, the market abroad is advancing to a point which promises soon to remove foreign iron from competition here. At present some foreign foundry for which importers committed themselves some time ago is selling at $28.75, duty paid, seaboard for 2.25 to 2.75 silicon, and $27.75 for 1.80 to 2.25 silicon.

St. Louis Market Strong

St. Louis, Feb. 12.—There has been no let down in the buying of pig iron in this district, and a number of melters who had remained out of the market are now covering their requirements. Sales since Feb. 1 have been in large volume. Much buying remains to be done for the second quarter, available tonnage for which is rapidly diminishing. Several southern furnaces have reached a position where they can promise nothing definite for delivery before the end of the first half, and the same is true of certain northern makers. The leading local producer has disposed of virtually its entire output for the first six months. Recent sales reported include 600 tons to a local stove builder for the second quarter; 450 tons to a local jobbing foundry; 500 tons to a Peoria melter; 200 tons to a specialty maker; 500 and

300 tons to stove plants in Belleville, and other lots ranging from car lots to 250 tons. The aggregate is approximately 6600 tons. A Kansas City melter is inquiring for 500 tons of foundry, an Iowa interest for 400 tons, a northern Illinois foundry for 450 tons, and a local melter for 500 tons, the latter specifies shipments to begin in February. In addition there are requests for prices on numerous small amounts, including a number from interests which have figured in the recent buying movement but find themselves in need of additional iron. A Colorado interest purchased 300 tons of ferrosilicon. Producers and selling agencies report that they are urged to ship contract quotas as rapidly as possible, this despite the heavy volume of current deliveries. The melt is steadily increasing. Prices hold firm, no southern iron being offered under $25, while northern ranges from $29 to $30. The leading local producer is asking $30 to $31, f.o.b. Granite City. This interest is now running on basic.

Tonnage Under Inquiry

Buffalo, Feb. 13.—Current inquiry for pig iron totals between 10,000 and 15,000 tons with one interest reporting 4000 tons sold. One of the inquiries is from the East, a little out of this district's shipping radius and is for 5000 tons of foundry. Two inquiries are for 1000 tons and one for 2000 tons. The price is generally $28 with some reports of $27.50 being quoted in New England to meet eastern Pennsylvania figures. The price of $28 is being quoted on second quarter iron and some booking is being done quietly at this price. The basic quotation is $28 and that of malleable $28.50.

Small Sales Predominate

Cincinnati, O., Feb. 13.—Buying in small tonnages continues to be the outstanding feature of the local pig iron market. The tone of the market is somewhat easier, although there are no outward appearances of any weakness. Buying for the most part is for prompt delivery. The heaviest consumers in the market are the stove manufacturers. Basic also is enjoying a good call from steel makers. Prices are firm and while mostof the southern furnaces are quoting $25, Birmingham base, a maiority of the business is booked at $24. Southern Ohio iron is $28 flat Ironton base. Second quarter inquiries are numerous, but the furnaces are not eager to accept them. Where this business is accepted current schedules are applied and in some instances $1 more is asked. The Tuscaloosa furnace has withdrawn from the market. Large sales during the past two weeks has necessitated this action. Sales during the past week include 200 tons of 8 per cent J. C. silvery to a northern Ohio consumer, 500 tons of southern iron to a southern Ohio manufacturer; and 500 tons of southern to a southern Indiana consumer. A southern Ohio stove concern took 750 tons of northern iron. The Norfolk & Western railroad also placed an order for several hundred tons of northern iron. The largest inquiry before the trade is that of the Worthington Pump and Machinery Corp. for 700 tons of northern, 50 tons of bessemer and 50 tons of charcoal.

Coke Continues To Soften

Beehive Furnace Tonnages for Delivery to July Closed at $6.75—Spot Quotations at $7—Steel Companies Close—Foundry Market Firm

COKE PRICES, PAGE 480

Pittsburgh, Feb. 13.—Purchase by one Mahoning valley interest of Connellsville beehive furnace coke at $6.75 to be delivered at the rate of 5000 tons monthly to July, and quotations of $7 in the spot market, disclose a further reduction in this grade. Early last week from $7.50 to $8, ovens, was quoted in the spot market. Later in the week $7.25 to $7.50 were representative figures. The top of the standard 48-hour fuel market today is $7, various offers of fuel at that level having been made to consumers this week. Another large Mahoning valley steel interest has entered the market, and apparently its by-product coke supply is adequate for its needs. It wants a tonnage of beehive coke similar to that closed by the Republic Iron & Steel Co., referred to above. The McKeefrey Iron Co., Leetonia, O. issued an inquiry for 3000 to 6000 tons monthly to July 1 but apparently it will not make blast in its furnace and accordingly will not buy coke, since it is offering to sell its output of coke in various directions here. The Eastern Steel Co. and the Pittsburgh Steel Co. have been recent purchasers in the spot market. One or two other interests indicate that if anything occurs to interrupt the regularity of coke receipts on their orders placed some weeks ago, they will have to enter the spot market for 25 to 50 carloads at a time since no stocks are maintained. Two inquiries are current here from eastern blast furnaces for 6000 tons and 8000 tons a month, respectively. One thing that may stabilize the market at or near its present position is the possibility of the several buyers now in the market closing up their contracts thus absorbing all free coke for which cars can be supplied. While the car supply has increased slightly there still is much room for improvement which will not be realized for some time. Heating coke is selling at $6 to $6.25. Due to dwindling demand it is more difficult to dispose of even small tonnages, eastern jobbers being almost entirely out of the market. An exceedingly large quantity of Latrobe coke was sold yesterday at $6.50, ovens. Foundry coke remains comparatively strong, one or two interests reporting the market firm at $9, ovens. Some standard selected 72-hour hand-drawn Connellsville foundry coke, however, has been sold as low as $8.50, although special brands have brought around $9.50, ovens. A fairly representative spread of the market is $8.50 to $9, ovens. Machine-drawn foundry coke has been sold to brokers as low as $8. Demand remains fairly heavy although individual lots are small. Production, according to the *Connellsville Courier*, for the week ended Feb. 3 was 244,100 tons as compared with 245,690 tons the preceding week.

Demand Still Urgent

St. Louis, Feb. 12.—Demand for coke for all purposes continues active. Users are still in need of fuel, and are urging deliveries on orders. These requests are being inadequately met, for the reason that neither coke nor freight cars are available at the ovens. Difficulty is being experienced in connection with coke from the East, and melters in this district are turning to other sources of supply. In recent weeks a number of foundries have been using southern coke for the first time. By-product plants are operating at capacity, or as close to that as supplies of coal will permit. Current output is readily absorbed, and more could be dispose of. While there have been few specific price changes, the trend is a shade easier than during the closing weeks of December. Some foundries in St. Louis have begun to accumulate small surpluses, but industries to the West and Southwest are still short of coke. Demand from water-gas manufacturers and smelters in the lead and zinc belt is described as brisk.

Deliveries Still Behind

Boston, Feb. 13.—Foundries are still urging shipment of coke, and in several cases considerable difficulty is reported due to scarcity of fuel. The coke companies, however, state that they are supplying all urgent needs and that unless car supply grows worse, no foundries will close because of lack of coke. The price of by-product fuel is unchanged, one maker quoting $16, delivered, and the other $15, delivered against contract.

Eastern Prices Lower

New York, Feb. 13.—Prices on coke have slumped materially. A weaker tone has become apparent in furnace coke, which now is bringing $6 to $6.50 Connellsville. There is some buying by the coal dealers at these figures. Foundry coke also has dropped off and now is quoted around $8.50, Connellsville. There is little demand from foundries at present, but the railroad embargoes undoubtedly have something to do with the present market situation, as deliveries are cut off from many consuming points. The market on Seaboard by-product foundry coke continues $12.84 to $12.91, delivered at Newark and other northern New Jersey consuming points.

Cincinnati Market Easier

Cincinnati, O., Feb. 13.—Less activity is noted in the coke market. Demand for domestic coke has fallen off and prices are easier, especially for the Connellsville grades. Furnace coke is quoted $7 to $7.50, while foundry coke ranges from $9 to $9.50. Wise county prices hold firm, largely because of the car shortage in that district. Chestnut coke is being marketed here for the first time in several weeks, and the ovens are offering larger supplies. Because of uncertainty of the labor situation ovens will accept orders only up to April 1 and at current schedules. The Indianapolis by-product coke situation is somewhat better, ovens having enough stocks to meet the demand. The market is $14.90, delivered.

Bar Bookings Still Large

Prices Firm Up as Consumers Offer Additional Tonnages—Makers Forced To Decline Much Business Because of Booked-up Condition

BAR PRICES, PAGE 480

Chicago, Feb. 13.—Soft steel bars have been definitely moved up from 2.10c to 2.25c, Chicago mill, and nothing under this figure can be obtained. Inland Steel Co. will announce its second quarter quotations this week and probably will go higher. At the same time it will divide its second quarter production among regular customers in proportion to usual purchases. Steel bars are acutely short and premiums are beginning to appear on the part of producers who can make reasonably nearby delivery. It has become necessary for western users to seek contracts with eastern mills and at present it seems impossible to obtain much further tonnage in the Pittsburgh district. This has caused heavy demand on warehouse stocks and large manufacturers like the Ford Motor Co. have drawn heavily on stores to keep up production. This situation has indications similar to those noted in the runaway market in 1920, when premiums of several dollars per ton were obtained. Chicago mills find orders and specifications up to the average which has prevailed during recent weeks and they are still in excess of mill production.

Good demand continues for bar iron which now is held at 2.50c, Chicago mill. Some producers are running their mills double turn and some single shift. An inquiry for 1000 tons from a western railroad has been turned down by some makers as they could not make delivery. Some producers have production booked to cover the next two months.

Rail steel bars now are firmly fixed at 2.10c, Chicago mill, with steady demand which reaches slightly ahead of prouction in the case of some mills. One producer is practically sold full for first half. A further advance in price is expected shortly and rail bars are expected to keep about $2 under soft steel.

Demand Is Heavy

Buffalo, Feb. 13.—Demand for soft steel bars is very heavy. One inquiry is for 750 tons. The going price is 2.20c Pittsburgh with one mill definitely placing its minimum at 2.25c. As high as 2.30c has been quoted. Carload inquiry is very good.

Booked Tonnage Still Heavy

Pittsburgh, Feb. 13.—Sizable tonnages of merchant steel bars continue to be booked and tonnages as large in the aggregate have to be turned down because of inability to deliver within the period wanted. Quotations of 2.00c to 2.10c, representing the figures at which contracts now being rolled were taken, largely are nominal and are hardly representative of the market. While the market is quotable at 2.10c to 2.25c, base Pittsburgh, whatever spot orders are taken from time to time appear to carry figures from 2.15c up. Buyers are not so much concerned over price as they are about getting deliveries.

The situation as regards refined iron bars is less acute and prices accordingly are not showing so much of a rising tendency. Refined iron still is quoted 2.75c; double refined 4.50c, and low phosphorus melting bars around 4.05c, base Pittsburgh.

Western Demand Heavy

Philadelphia, Feb. 13.—Steel bar demand continues brisk particularly from western consumers. Many requests for second quarter contracts have been received but were declined. Prices generally range from 2.10c to 2.25c, base Pittsburgh, and it is growing more difficult to do anything under 2.25c on ordinary business.

Inquire For Second Quarter

Cleveland, Feb. 13.—More consumers are putting out inquiries for second quarter requirements and these call for round tonnages both singly and in the aggregate. The mills, however, are not encouraging this business in view of their obligations. Automobile builders are in the market for tonnages of alloy steels for second quarter but some of the leading makers are not desirous of closing this business. While 2.10c, base Pittsburgh, has not yet disappeared on soft steel merchant bars, the market appears to be hardening at 2.20c. Local makers have quoted as high as 3.00c, Pittsburgh, on forging steel equivalent to 2.75c, base. The minimum on hoops now is 2.90c, Pittsburgh. Narrow and light bands are quoted at 3.50c, Pittsburgh.

Cold-Drawn Price Unsatisfactory

Pittsburgh, Feb. 13.—With bookings heavy, specifications liberal, and operations on an 80 to 90 per cent basis, little is left to be desired in the cold-drawn steel bar industry. It is claimed that with merchant steel bars on the basis of 2.10c, Pittsburgh, which now is absolute minimum in the spot market, $11 per ton the charge for conversion, cold-drawn bars at 2.65c, base Pittsburgh, is not enough to cover costs and another advance shortly may be expected. Shipments, although interrupted from time to time by transportation difficulties, continue to involve large tonnages. The size of individual orders has been increasing and one typical order received within the past week involved 300 tons of one size. Numerous orders call for 50 to 200 tons of a size while others involve two or three different sizes but the tonnages are sufficiently large to permit the efficient scheduling of operations. Automobile and allied consuming lines still figure largely among the buyers.

Hoop Prices Advanced

HOOP PRICES, PAGE 480

Pittsburgh, Feb. 13.—Hoops and bands have increased $3 per ton from a minimum of 2.75c to 2.90c, base Pittsburgh. On small hoops and bands, 3.00c to 3.40c is named both by regular hoop and band manufacturers and hot-rolled strip steel producers. The Pittsburgh Steel Co. also has advanced bale ties approximately $5 per ton. Hoop and band bookings are heavy; in fact, some makers in view of various circumstances do not believe they will be able to ship out all material on order for the remainder of the first month. Some doubtless will be carried over into the April, May and June period. So far the books have not been opened for all of the second quarter and makers are taking care of only a part of their regular customers' needs for that period.

Bolt, Nut, Rivet Demand Continues To Gain

NUT AND BOLT PRICES, PAGE 548

Chicago, Feb. 13.—Moderate demand for bolts and nuts continues in a steady volume and plant operation is as high as possible to keep it with the present supply of raw material. While most important users covered first quarter by contract, some demand still is being received for fairly large lots for immediate delivery. Western makers are unable to accommodate much of this business.

Demand Is Growing

Philadelphia, Feb. 13.—Bolt, nut and rivet demand is increasing. Prices are being firmly maintained and talk of a further advance is growing.

Nut-Bolt Advance Expected

Pittsburgh, Feb. 13.—That the advancing market in steel products generally, will be reflected in higher prices on nuts, bolts and rivets within the next 30 days is the concensus of opinion here. Costs of raw material, etc., are increasing and already the quoted levels are more firm than they have been in several weeks past. Most makers are booked up for the quarter on nuts and bolts, and specifications are coming in freely. Sizable business continues to develop from railroads week by week and other large consumers too are active. Large machine bolts still are quoted 50 and 10 off. Quoted prices on rivets have been holding less firmly than those on nuts and bolts, but there has been no formal reduction, 3.00c and 3.10c, base Pittsburgh, still being quoted on structural and boiler rivets, respectively. These prices this week, however, are firmer. Specifications are more liberal.

Prices Are Firmer

Cleveland, Feb. 13.—Bolt and nut demand continues to improve, orders and inquiries coming from all branches of the manufacturing trade. Prices are firm and advances on second quarter business are anticipated. As with bolts and nuts rivet demand is improving and prices are stronger. Shading of prices appear to have disappeared. No second quarter business has been taken as yet, although some has been offered.

The National Screw & Tack Co., Clevelnad, has received from the Ford Motor Co. an order for 25,000,000

hexagon nuts requiring about 700 tons of steel. This is believed to be the largest order of its kind ever placed.

Ore Sellers Waiting

Philadelphia, Feb. 13.—The current market for foreign and domestic iron ore in the East is nominal. No interest is shown in buying or selling. Ore consumers generally are provided, and sellers believe that due to advancing pig iron prices they will be able to get better ore prices later.

Sheet Mill Operations in Valley Are Enlarged

Youngstown, O., Feb. 13.—Finishing mill operation advanced this week with the resumption of 9 sheet mills. The situation still is aggravated by a shortage of semifinished steel which is preventing the scheduling of 3 bar mills, 9 hot tin mills and 15 sheet mills at various plants in the district.

After a week's shutdown of its hot mill department, one producer accumulated enough sheet bars to place 9 sheet mills one line at the beginning of this week, increasing district operations in this direction from 75 to 82 per cent. The Brier Hill Steel Co. has 24 sheet mills under power; the Youngstown Sheet & Tube Co. 15; the Newton Steel Co. 13 the Sharon Steel Hoop Co. and the Trumbul Steel Co. 9 each; and the Falcon Steel Co., the Republic Iron & Steel Co. and the Mahoning Valley Steel Co. 8 each, a total of 94 active umts compared with 85 a week ago.

Steelworks' operation is unchanged at 88 per cent representing 45 independent open hearths. Participants include the Republic Iron & Steel Co. with 12 furnaces, the Youngstown Sheet & Tube Co. with 11, the Brier Hill Steel Co. with 10, the Trumbull Steel Co. with 7 and the Sharon Steel Hoop Co. with 5. Blast furnaces in operation throughout the Mahoning valley total 24 or 86 per cent of capacity. Preparations, however, are being made to light another steelworks stack soon.

Miscellaneous operation includes 7 finishing mills, 5 pipe furnaces and the bessemer department at the Republic Iron & Steel Co.; 10 pipe furnaces, a merchant mill and the rod, wire and bessemer departments at the Youngstown Sheet & Tube Co.; and 20 hot tin mills and the strip departments at the Trumbull Steel Co.

Leads in Safety Contest

Pittsburgh, Feb. 13.—The Edgar Thomson works, Braddock, Pa., has been awarded the Carnegie Steel Co.'s safety trophy for January, having made the best record for the month in accident prevention among the 18 plants of the Carnegie company. The second meeting of the safety course being conducted in Braddock was held Tuesday evening, Feb. 13. It was addressed by Rev. James R. Cox, chaplain of the Pittsburgh Mercy hospital, Pittsburgh.

Plates Continue Advance

Further Increases Bring Minimum to 2.20c—Chicago and Eastern Mills Quote Higher—15,000 Tons Pending There—Tanks Still Feature

PLATE PRICES, PAGE 480

Philadelphia, Feb. 13.—Plate demand is brisk and the mills are accumulating order books. They find difficulty in increasing output, however, owing to the labor shortage. Present plate production in the East ranges from 60 to 70 per cent. A considerable part of the present demand continues to come from the West. Eastern mills have sold at 2.50c, base, mill, for shipment to Pittsburgh, or 2.85c, delivered, Pittsburgh. Minimum prices now generally are 2.25c, base, Pittsburgh, although lower figures have not disappeared. One eastern mill advanced to 2.35c, Pittsburgh and has booked some tonnage at this price. Some consumers are inquiring for second quarter tonnage but the mills are accepting very little. Many gas holder projects are approaching the closing stage with thousands of tons of plates involved. These include gas holders at Long Branch, Elizabeth and Camden, N. J., and Port Arthur, Tex., and numerous other places. The Red "D" line has withdrawn its recent inquiry for boats. The Pennsylvania railroad is inquiring for 10,000 tons of plates for car repairs, a feature being that copper-bearing steel is specified. The Alan Wood Iron & Steel Co. has advanced floor plates $3 to 3.90c, base, Pittsburgh. Eastern makers say the demand for light plates is far in excess of capacity. Hence, they are quoting separately light plates on the basis of 2.35c and 2.40c, Pittsburgh, for 3/16-inch and lighter.

Wants Car Material

Buffalo, Feb. 13.—A local car company has asked bids on from 2000 to 10,000 tons of car-building material, mostly plates.

Tank Building Takes Plates

Chicago, Feb. 13.—As new demand for steel plates for car building becomes somewhat less an increase in demand for oil storage tanks is apparent. Considerable tank business has been placed with builders in the past few days. The Chicago Bridge & Iron Works, the Petroleum Iron Works and the United Iron Works have covered 17,000 tons of tank plates with a Chicago independent mill and the latter still has 8500 tons of plates covered by price protection. The Chicago Bridge & Iron Works has taken 20 storage tanks of 80,000 barrels capacity, involving 6000 tons of steel plates, for the Petroleum Midway Co. of San Pedro, Cal. The Sinclair Oil Co. is inquiring for 6000 tons and the Roxana Petroleum Co. for 3000 to 4500 tons of plates for tanks to be erected in the Midland district. The Pan-American Petroleum & Transport Co. has renewed its former inquiry for 7500 tons of plates for tanks to be built at San Pedro, Cal. Plates have been advanced $3 to $5 per ton, the minimum now being 2.35c, Chicago mill, while 2.45c, mill, has been quoted. Inland Steel Co. probably will allocate its second quarter production of plates this week and it seems likely the last named price will apply on its second quarter tonnage.

Sales Are Made Higher

Cleveland, Feb. 13.—Plates for early shipment have continued scarce and this is resulting in higher prices both in the so-called premium business for early delivery by certain mills and in the schedules of larger producers for shipment at their convenience. For delivery in three to four weeks, eastern mills sold this week to western consumers at 2.40c, mill, equivalent to about 2.60c, Pittsburgh, and have quoted as high as 2.70c, Pittsburgh. One lot of 150 tons went at the lower equivalent. The larger mills regard 2.20c, Pittsburgh, as minimum and are making sales for deferred delivery on that basis. One producer is quoting 2.35c, Pittsburgh or eastern mill. Standard Oil interests revived an inquiry for 20 stills, 600 to 800 tons, and another lot of 20 stills calling for about the same tonnage is about to be closed. The outlook for additional marine business is not so promising. The proposition involving one to three freighters recently to come up has been deferred. The inquiry for 42 tugs and power barges from a brokerage interest has not developed anything definite.

Interest Centers in Oil Tanks

Pittsburgh, Feb. 13.—Oil storage tanks continue uppermost in the consideration of plate fabricators in this and other districts. Tanks for the Sinclair Refining Co., for installation at Marcus Hook, Pa., were awarded to the Riter-Conley Co., Pittsburgh. These were six 80,000-barrel and 10 55,000-barrel tanks, involving approximately 5000 tons of steel, mostly plates. The Pan-American Oil interests have not as yet taken action on 3 tanks for California, 10 of one type and 20 of another. The order is expected to be placed this week. The Sinclair interests still are negotiating for additional tanks, not yet having awarded all that they need in various fields. On these tonnages and various others of smaller proportions fabricators are asking for protected quotations from the mills. This develops the fact that 2.20c, base Pittsburgh, is becoming minimum both by the Carnegie Steel Co. and independent producers. The Cambria Steel Co. now is quoting 2.25c, Johnstown, Pa., which is equivalent to about 2.35c, Pittsburgh, for delivery in the Pittsburgh territory. This interest has been able to obtain 2.35c, Coatesville, Pa., on a recent small order for delivery within four weeks. The Pittsburgh equivalent of this would be around 2.68c, all of which is indicative of a strong market. Barge builders continue to place fair size tonnages fro mtime to time, as do tank car builders and boiler shops.

Scrap Stocks Depleted

Despite Restricted Consumer Buying Prices Are Advancing as Stocks Run Low—Steel Grades Are Strong—Railroad Offerings Larger

SCRAP PRICES, PAGE 552

Chicago, Feb. 13.—Little change is noted in the market for iron and steel scrap here prices remaining firm and in some cases increasing, while buyers resist the present level and any further movement. Steel scrap has become somewhat active and practically all users are taking some tonnage to balance the steel taken out of reserves. Foundry grades are in excellent demand for all classes of foundry use, and indicate activity in melting. A fair volume of scrap is being produced but commitments by dealers seem sufficient to assimilate all of it. The Wabash railroad offers 2900 tons and the Chicago Great Western railroad 500 tons.

Urgent Demand for Cast

Boston, Feb. 13.—New England foundries finding pig iron shipments slowing up have turned their attention to cast scrap and because buying in this grade has been light for several months, those coming into the market at the present time are placing fairly large orders to build up reserve supplies. The result has been a condition approaching a scramble. One foundry on the New Haven road unable to obtain rail shipment took in 50 tons by truck during the week, and reported a price of $26 delivered for No. 1 machinery. Sales to points along the Boston & Maine railroad are reported at $24 delivered. Railroad malleable has sold at $25 delivered and the tonnage moved has been unusually heavy. The Walworth Mfg. Co. is understood to have contracted for 500 or 600 tons, but confirmation is lacking. Stove plate is one of the few grades which has not been marked up. This is probably due to the fact the American Brake Shoe & Foundry Co. is out of the market. Another heavy consumer in New England, the Crane Co. at Bridgeport, Conn., also has failed to buy as expected. Wrought iron pipe has sold at $14.50 shipping point for delivery to outside New England points. Heavy melting steel is firm at $17 for shipment to Pittsburgh. Car supply and railroad embargoes are interfering.

Upheld by Outside Influences

Pittsburgh, Feb. 13.—The local scrap market continues upheld by outside influences, chiefly the high prices which dealers and users in eastern Pennsylvania as well as in Youngstown, O., districts are willing to pay. Depleted stocks however, also have much to do with the high prices. Heavy melting steel continues quotable at $23.50 to $24 although some small sales of special grades brought higher figures. Consumers largely are disinclined to manifest interest in the market at those levels and believe if they can hold off long enough the market will right itself upon a lower basis. The last fairly large sale of billet and bloom crops was at $28; that grade accordingly is up 50 cents to $27.50 to $28. Recent sales of compressed sheets have involved figures from $22 to $22.50 and bundled sheets are brought into line with quotations of $20 to $20.50. A fairly large tonnage of iron car wheels carried figures around $25, and $25.50 now is being quoted. This and one or two other grades accordingly are marked up 50 cents. It is difficult to obtain higher than $19 for shovel turnings and but few sales within six or eight weeks have been noted. Foundries are not buying large quantities of cupola cast scrap, the largest sales noted in recent weeks involving between 500 and 2000 tons at a time. A larger quantity recently was disposed of at $24.50 to a nearby steel interest.

Demand Is Unabated

St. Louis, Feb. 12.—With stocks light and the demand unabated, the market for scrap iron and steel continues active and strong. Particular strength is manifested in steel grades, which have advanced to new high levels. With the exception of rolling mill grades, which have quieted down somewhat all items are in urgent demand. The steel plants are seeking additional tonnages, but are loath to pay prices being asked.

Cast grades have participated in the

(*Concluded on Page* 499)

Steel Shortage Is Acute

Buyers Fail To Obtain Semifinished Material, with Offers of Premiums —Leading Interest Among Users Seeking Tonnages

SEMIFINISHED STEEL PRICES, PAGE 480

Pittsburgh, Feb. 13.—Included among several consumers of sheet bars who are offering to pay $40, Pittsburgh, without being successful, is the Newport Rolling Mill Co. The American Sheet & Tin Plate Co. is reported to have encountered no quotations lower than $40, Pittsburgh or Youngstown, in its recent survey of the tin bar market when it attempted to buy 25,000 tons additional. In view of the fact that makers are either filled up with orders or need all the sheet and tin bars they make in their own conversion departments, the market is nominally quotable at $40, Pittsburgh or Youngstown. From $38.50 to $40 is understood to be still quotable on billets and slabs, the minimum being the figure involved in two or three recent transactions, calling for 2000 to 5000 tons at a time.

The National Tube Co. would be a purchaser of round tonnages of bessemer billets were they available at a right figure. While up to $54 recently was paid to a Kentucky producer of forging billets, $47.50 to $50 still remains the quotable Pittsburgh market. Only a few small lots have come up in the past several days and on these one or two makers could not quote. The Cambria Steel Co. in fact, is submitting every inquiry to its main office where the quotations are made dependent more or less upon how the tonnage under consideration works in with present bookings and contemplated rolling schedules.

Skelp remains quotable at 2.10c to 2.25c with some makers quoting a minimum of 2.20c, base Pittsburgh. Several consumers of skelp are in the market for various sized tonnages, considerable difficulty being encountered in locating a taker. The same thing applies to wire rods. Wire rod buyers find it practically impossible to place their requirements due to the filled-up condition of the wire mills. The $47.50 to $50 spread still applies but is understood to be practically nominal.

Inquiry for 30,000 Tons

Youngstown, O., Feb. 13.—Inquiries for billets, slabs and sheet bars submitted to producers in this territory in the past week involve an aggregate of 30,000 tons. This figure would have been larger but for the fact that one consumer, recently forced into the market, merely was endeavoring to get an expression as to whether tonnage was available. In view of the shortage of semifinished steel in this district producers were unable to consider the inquiries. Two small blocks of sheet bars each involving about 200 tons were sold at $40, Youngstown, early this week. At times small tonnages of semifinished steel became available for some unforeseen circumstance surrounding mill operations and only in such a case are consumers able to pick up sheet bars here. At the moment the minimum figure at which sheet bars could be purchased is $40, Youngstown.

Higher Prices Possible

Cleveland, Feb. 13.—A growing shortage of sheet bars, billets and slabs is indicated by the nature of inquiries received here from users outside of this district. The demand is chiefly for sheet bars and small billets and it is believed that $45, Pittsburgh or Youngstown, could be obtained in some cases for spot material, though the market is considered not less than $40 at present. The leading producer in this district is unable to take on any more business, and is not booking for the second quarter. The scarcity of sheet bars is such that makers are unwilling to quote. An inquiry for 5000 tons from a Northern Ohio consumer this week was passed up by the mills to which it was presented.

Forging Billets Sold at $47.50

Philadelphia, Feb. 13.—Fair sales of forging billets are being made at $47.50, base Pittsburgh, which now is minimum. No additional business has been closed for rerolling billets, but some tonnage is outstanding. The minimum price is

$40, base Pittsburgh. Makers find it easy to get $50 for wire rods.

Warehouse Prices Stiffer As Demand Gains

WAREHOUSE PRICES, PAGE 544

New York, Feb. 13.—With mill shipments becoming further advanced demand in the local warehouse market continues to improve. Practically all products are moving rapidly, with trading in structurals and steel bars particularly good. Prices, while tending upward, have not undergone a further change.

Expecting Further Advances

Philadelphia, Feb. 13.—Local jobbers in iron and steel products report current demand is estimated at 90 to 100 per cent of what is considered normal. Due to advancing mill prices further increases in jobbers' quotations are anticipated.

Sheets Advanced $3 a Ton

Cleveland, Feb. 13.—An advance of $3 a ton on blue annealed, black and galvanized sheets has been made by the leading jobber in sheets in this district. This interest now is quoting galvanized sheets at 5.40c, blue annealed at 3.65c and black at 4.40c. The new prices became effective today. Other prices are firm at the established levels. Orders are heavy, the leading interest reporting it has been forced to decline considerable business due to lack of stocks.

Further Price Advance

Detroit, Feb. 13.—A further advance was made in some lines of warehouse steel this week due to similar advances by the mills. Structural shapes are up $2 a ton, while bands and bars are up a like amount. Common chain is marked up 40 cents per 100 pounds, due to the scarcity and broadening demand. Dealers report trade active.

Strip Is Quoted Higher

STRIP PRICES, PAGE 480

Pittsburgh, Feb. 13.—The price advance in strip steel has materialized. Late last week leading makers increased their price $5 per ton on cold-rolled, to 4.75c, base Pittsburgh, and $3 per ton on holt-rolled to a mimimum of 2.90c. On narrow sizes and thin gages of hot-rolled, 3.00c to 3.40c is being quoted. Demand appears increasing and on certain sizes of hot-rolled 60-day deliveries are possible, although in connection with cold-rolled deliveries are deferred from four to six weeks. Some producers are heavily obligated for the entire quarter and from the outlook present bookings will run over into the second quarter period. The new prices are not being generally named for the entire second quarter since the advance merely takes cognizance of the recent increase in the raw material market, and other advancing costs of production probably will necessitate a further increase in the strip market. Many makers are taking care of only a portion of their regular customers' anticipated requirements for the second quarter.

Export Sheets in Demand

Japanese Buyers Reported Offering More Than Recently Done in England on Some Grades—Mills Refusing Large Domestic Orders

SHEET PRICES, PAGE 480

Pittsburgh, Feb. 13.—Main lines of sheet consumption anticipate the best year of their histories in 1923. Heavy demand for sheets of all grades promises to continue for some time. More business is developing from week to week. One interest after booking a total in excess of 50,000 tons last week, received more than 7000 tons additional sheet specifications in Monday morning's mail. Large tonnages continue to be refused mainly because producers are unable to grant the desired deliveries. The largest business refused in this section recently involved 10,000 or 11,000 tons. All regular customers are endeavoring to enlarge their commitments and some who are not regular customers are endeavoring to get places on certain makers' books because their regular sources of supply cannot comply with their requests. Sizable buying for domestic consumption is true of almost every grade of sheets produced. Considerable business is being presented to American producers indirectly as the result of the Ruhr occupation by France, which has served not only to cripple the German iron and steel business, but the iron and steel industry of France and Belgium. Neutral countries, including Holland, are endeavoring to order from American sheet producers, the material ordinarily furnished by French and Belgian steel mills. Japan again promises to become an important buyer of black sheets, mainly thin gages, and is offering to pay in advance of $105 per ton, delivered, on 30½-gage, which is approximately $20 above the price at which considerable business was placed by it in England. Despite the fact that this sales price is more than $10 per ton above what domestic consumers will pay for the same sheets, makers are not anxious to commit themselves heavily, so much business more attractive from a rolling standpoint being available to them in the domestic market. The American Sheet & Tin Plate Co. with other sheet producers, continues to have trouble both as regards labor and steel shortages, although the past week's operating schedule for the leading interest exceeded the preceding week's by a fraction, 89.6 per cent being attained. Independents continue to average around 90 per cent and shipments still are heavy. More than 70 per cent of the leading interest's obligations are in hand in the form of actual specifications and if business continues to come in the way it has for several weeks past, it will not be long before specifications for all of the output of the second quarter will be written up. The American company's prices continue unchanged at 2.50c, 3.35c, 4.35c and 4.70c, base Pittsburgh, one blue annealed, black sheets, galvanized and full-finished automobile sheets, respectively. Independents continue to name prices from $2 to $8 per ton above those levels. The maximum on galvanized, 4.75c, is $8 per ton above the American company's level although the usual market is 4.50c, or $3 over. So far the maximum quotation on blue annealed is 2.75c, or $5 per ton above although 2.60c is considered a fairly representative open market quotation. The usual market on black is 3.50c, or $3 over the American company's level, while on full-finished it is claimed that 5.25c is being quoted in one direction. The usual independent figures are 4.85c to 5.00c.

Difficult to Buy Sheets

Youngstown, O., Feb. 13.—With the majority of sheetmakers in the Mahoning valley booked as far as they care to go in the face of advancing sheet bar prices and the shortage of semifinished steel, consumers are finding it difficult to place tonnage. No maker in this district can be found who is willing to accept galvanized tonnage at any price. One galvanized producer has set his price at 4.75c, Pittsburgh, but is not interested in taking business. Black is quoted 3.50c to 3.60c, Pittsburgh, by three producers and substantial tonnages are reported to have been booked at the maximum figure. An Ohio sheet producer with mills on Lake Erie booked 300 tons of black at 3.35c, Pittsburgh, late last week. In this district, however, nothing less than 3.50c for black, 2.75c for blue annealed and 4.75c for galvanized, are heard. Reports to the effect that the Youngstown Sheet & Tube Co. is quoting 2.75c, 3.60c and 4.75c on blue annealed, black and galvanized respectively are without foundation. Its present obligations will not permit the booking of additional tonnage and for this reason its prices remain unchanged.

Sheet Shortage Is Seen

Chicago, Feb. 13.—With heavy demand for sheets from all classes of users this market offers much less production than is required. The Inland Steel Co. has made up a schedule of tonnages it can allocate to its regular customers from its second quarter production. It expects shortly to put the schedule into effect and to announce prices covering the second quarter.

Some Second Quarter Contracting

Philadelphia, Feb. 13.—Some second quarter contracting in blue annealed sheets is being done. The mills are picking business carefully particularly because consumers are requesting much more tonnage than was expected. The minimum price on blue annealed by independent makers is 2.75c, Pittsburgh while 2.85c and 2.90c is being done right along for nearby carloads. Some independents now are naming 3.60c base as a minimum on black and 4.60c on galvanized. Generally the volume of sheet business is increasing and the mills are having difficulty increasing production due to labor shortage.

Structural Awards Decline

Placings During Past Week Shrink to 20,430 Tons—Chicago Job Calls for 10,000 Tons—Prices Stronger

STRUCTURAL SHAPE PRICES, PAGE 480

Chicago, Feb. 13.—An advance of $3 per ton has moved the minimum quotation on structural shapes from 2.20c to 2.35c, Chicago mill. Inland Steel Co. expects to announce its price for second quarter delivery of this product within a few days and it probably will be at least as high as this minimum. Demand for structural material continues strong and new projects are coming out continually, indicating continuance of heavy demand through the summer. The leading award of the week was 10,000 tons for a power station for the Commonwealth Edison Co. Bids have just been taken on two important projects in the Chicago district requiring 12,000 tons.

Transmission Tower Job Largest

Pittsburgh, Feb. 13.—The largest job reported during the current week outside of tank work and coming to a fabricator in this district, is the transmission towers for the Detroit-Edison Co., Detroit. This job involved about 1400 tons and was awarded the American Bridge Co. A large number of transmission towers for different electrical companies in various sections still are pending. More orders of this nature are expected to be awarded this week. The P. H. Kelly Construction Co. was awarded the general contract for the Peabody High school annex which will award the steel contracts shortly involving 500 or 600 tons of structural shapes. The United Cigar Stores building at Akron, O., recently awarded the Riverside Bridge Co., Wheeling, W. Va., involved 500 or 600 tons. Structural shapes in the spot market are quoted at 2.20c to 2.25c although material still is being furnished on contracts at 2.00c to 2.10c, base Pittsburgh.

Delivery Further Slackens

Boston, Feb. 13.—In structural steel a seller's market prevails at the present time. Mills are well covered for at least 90 days ahead, and seem independent as to further orders. Prices have advanced during the past week and prompt delivery tonnage now commands 2.30c, Pittsburgh. One maker still is offering plates at 2.20c but this is for a 12 weeks delivery at best. Quotations against specifications are all firm at 2.25c. New business is heavy.

Brisk Demand Continues

Philadelphia, Feb. 13.—A brisk shape demand continues from all over including the West. Some sales have been made for shipment to the West at prices of 2.50c, base eastern mill. Generally the minimum price here is 2.25c, base Pittsburgh. Lower figures are difficult to obtain on new propositions. One eastern mill is quoting 2.25c, Pittsburgh, as a minimum.

Premiums on Nearby Shipments

New York, Feb. 13.—A slight lull is being noticed in structural activity here. There are few outstanding awards or inquiries, however, this is regarded of little significance with prices continuing upward. Prices asked on plain shapes are 2.15c to 2.25c, Pittsburgh, with most offerings nearer the outside figure. Premiums of from 10 to 15 points over the 2.25c price is being done on nearby deliveries.

Only Small Inquiries Out

Cleveland, Feb. 13.—The lull which has continued here during recent weeks was broken slightly by the awarding of contracts aggregating in the neighborhood of 1500 tons. One award for bridge construction and reconstruction work accounted for 1000 tons of this total. This was taken by the American Bridge Co. The balance of the tonnage was made up of several small jobs. In addition, two small jobs involving 160 tons were awarded to two local fabricators. Inquiries continue to come in but only for small tonnages, varying from 100 to 500 tons. Among these is one for 400 tons for radio towers. With structural mills well booked, prices continue to grow stronger, 2.20c base Pittsburgh, being named as the minimum.

CONTRACTS PLACED

Awards reported this week ..... 20,430 tons
Awards reported last week ..... 31,773 tons
Awards reported two weeks ago .. 47,787 tons

10,000 tons, Crawford avenue station of Commonwealth Edison Co., Chicago, to American Bridge Co.
8500 tons, tank work for Sinclair Oil Co., New York, to American Bridge Co.
5000 tons, mostly plates, oil storage tanks for the Sinclair Refining Co., Marcus Hook, Pa., to the Riter-Conley Co.
2000 tons, building at Elizabeth, N. J., to McClintic-Marshall Co.
1800 tons, plant addition for Anaconda Copper Mining Co., Miami, Ariz., reported last week as awarded to independent, placed with Kansas City Structural Steel Co.
1400 tons, transmission towers for the Detroit-Edison Co., Detroit, to the American Bridge Co.
1200 tons, Richmond Hill development, Long Island railroad, New York, to McClintic-Marshall Co. This is in addition to 1600 tons awarded last week to Shoemaker-Satterthwait Bridge Co.
1000 tons, power house for Standard Oil Co., Bayonne, N. J., to Bethlehem Steel Bridge Corp.
1000 tons, new bridges and bridge repairs for Buffalo, Rochester & Pittsburgh railroad, to American Bridge Co. Reported last week as 750 tons.
800 tons, Cherry street bridge, Appleton, Wis., to American Bridge Co.
773 tons, bridges at Denison, Tex., for Missouri, Kansas & Texas Railway Co. of Texas, to Wisconsin Bridge Co.
600 tons, building for Edge Moor Iron Co., Edge Moor, Del., to Belmont Iron Works.
400 tons, department store, Hens & Kelly, Buffalo, to Buffalo Structural Steel Co.
400 tons, power house for Standard Oil Co., Bayonne, N. J., to independent. Reported last week as 500 tons and awarded to unnamed fabricator.
400 tons, Bigelow Hartford Carpet Co., Hartford, Conn., to American Bridge Co.
350 tons, plant for National Lead Co., Melrose, Cal., to Dyer Bros. Golden West Iron Works, San Francisco.
329 tons, White Bear avenue viaduct over Omaha tracks, St. Paul, Minn., for Chicago, St. Paul, Minneapolis & Omaha Ry. Co., to American Bridge Co.
200 tons, locomotive shop for Boston & Maine railroad, Concord, N. H., to American Bridge Co.
200 tons, high school, Niagara Falls, N. Y., to Kellogg Structural Steel Co.
200 tons, reconstruction work for Interborough Rapid Transit Co., Brooklyn, N. Y., to American Bridge Co.
198 tons, office building, for Western Clock Co., La Salle, Ill., to J. E. Moss, Wheeling, West Va.
130 tons, extension to galvanizing plant, Falcon Steel Co., Niles, O., fabricator not known.
Tonnage not stated, coal tipple for Cambridge Collieries Co., Senecaville, O., to Argonia Bridge Co.

CONTRACTS PENDING

2000 tons, Homan avenue shops of Peoples Gas Light & Coke Co., Chicago, taking bids.
1500 tons, apartment, Germantown, Pa.; pending.
1400 tons, apartment at 1055 Fifth avenue, New York; pending.
400 tons, two high schools, Piqua, O.; bids being taken.
250 tons, apartment building, Hyde and Lombard streets, San Francisco, pending.
250 tons, foundry building for Barnes Mfg. Co., Mansfield, O.; bids asked.
220 tons, plant addition for Cincinnati Galvanizing Co., Cincinnati, O.; bids asked. Dresser Minton Co., Cleveland, general contractors.
200 tons, school, Jamestown, N. Y.; pending.
100 tons, bridge for Nickel Plate railroad, Chicago; bids in.

English Spiegel

Disappears as Factor in Competition —Alloy Demand Quiet

FERROALLOY PRICES, PAGE 480

New York, Feb. 13.—New York importers have sold at least 2500 tons of English ferromanganese during the past week at the full price of $107.50 duty paid. English spiegeleisen by reason of the rise in exchange practically has disappeared as a factor in the competition here. The minimum price on English spiegeleisen now probably would be $39 duty paid, which compares with the domestic market of $35 to $37 furnace.

Sales of domestic spiegeleisen during the past week aggregated only a few hundred tons. Sales involved prompt material and went at $36 to $37 furnace for 20 per cent. Inquiry now before the trade aggregates at least 2000 tons so that some activity is expected in the coming week.

Quotations on special alloys are unchanged. Sales of ferrotungsten have been made at 88 cents and of tungsten powder at 94 to 98 cents. Tungsten ore is quoted at $7.50 per unit. Car lots of 50 per cent ferrosilicon have been sold at $82.50, $83 and $87.50 delivered. Small lots of foreign 1 to 2 per cent carbon ferrochrome have been closed at 28 cents a pound contained. A good volume of ferrovanadium business is being booked at $3.50 to $4 per pound.

Quiet Market Continues

Pittsburgh, Feb. 13.—The ferroalloys market is quieter than it has been in several weeks. Only occasionally carload orders are noted in ferromanganese although these carry the $107.50 seaboard base figure with $4.79 freight rate to Pittsburgh. A few small sales of imported material too, are noted at the same level. It is understood that a valley consumer two or three weeks ago closed on approximately 2000 tons with the Carnegie Steel Co. under a special arrangement since this producer only is supplying one or two of its regular customers, needing practically all the ferromanganese it produces in its own operations. The spiegeleisen market is dull. On single carloads of 16 to 19 per cent and 19

to 21 per cent material, $36 and $37, respectively, are quoted. Larger tonnages carry proportionately lower figures.

Ferrosilicon is difficult to locate. Middle interests occasionally have opportunity to figure on 50 or 100 tons at a time but practically all domestic output is obligated. From $85 to $87.50, freight allowed, are nominal quotations. Other alloys too, are inactive. Recent inquiries for small lots of ferrotungsten have been closed at around 90 cents.

More Activity at Chicago

Chicago, Feb. 13.—More activity is noted in ferromanganese in this district with some sellers quoting $110, seaboard duty paid. Sales, however, are being made at $107.50, seaboard duty paid. Spiegeleisen is firmer as producers have a better tonnage on their books.

New Sales Are Light

Philadelphia, Feb. 13.—Sales of ferromanganese in this district the past week have involved a few carloads of both English and domestic metal at $107.50, duty paid tide water and the same price at domestic furnace. Current demands are quiet. It is somewhat difficult to obtain English metal for shipment previous to April. Domestic makers are sold up for a couple of months. However, consumers are well provided and there is no immediate shortage although students of the market say there may be before July 1. A few hundred tons of spiegeleisen have been sold at $36 and $37, furnace, for 20 per cent.

Manganese ore is quiet. No inquiries are current and the market is nominal at 33 cents per unit tidewater, for both Indian and Brazilian ore.

Iron Imports

In First 10 Months of 1922 Total 229,950 Tons

Washington, Feb. 13.—Figures just available from the department of commerce, bureau of foreign and domestic commerce show that from Sept. 22 to the end of October, 1922, imports of pig iron totaled 120,779 tons. Of this, England furnished 56,536 tons, Scotland, 28,715 tons, Belgium, 15,777 tons and France 17,017 tons. During the period ferromanganese imports totaled 11,229 tons, England supplying all but 11 tons. During the period 22,523 tons of manganese ore were imported.

Total imports of iron for the 10 months ending with October were 229,950 tons. Ferromanganese imports during the 10 months totaled 83,240 tons and manganese 350,160 tons.

Iron imports in the 40 days begining Sept. 22 were 120,000 tons which compares with 46,839 tons the first 22 days in September and 109,000 tons in the first 9 months.

Iron Ore Imported

Philadelphia, Feb. 13.—Imports at this port during the week ended Feb. 10, included 4964 tons of iron ore from Sweden and 8550 tons from French Africa. But 220 tons of pig iron was imported, this coming from France.

Locomotive Buying Active

Pennsylvania Places Order for 75—Car Buying Considerably Lighter Than During Recent Weeks—Track Materials Stronger

RAILROAD TRACK MATERIAL PRICES, PAGE 480

Chicago, Feb. 13.—Although inquiries are in the market and steel mills have protections out on steel covering 18,000 freight cars and 266 passenger cars, relatively little of this inquiry is being placed in the form of orders. During the past week less than 1000 additional cars were placed with builders. Part of this condition is due to the crowded state of car builders' books and their inability to make deliveries short of several months. While standard steel rails are quiet, some inquiry is being received for small lots and a few sales are being made. At times the aggregate of this business reaches 1000 tons per week. Track fastenings are being specified fully on all contracts but relatively small new sales are being booked. Light rails are in fair demand.

More Locomotives Awarded

Philadelphia, Feb. 13.—An award of 75 locomotives has been made by the Pennsylvania railroad to the Baldwin Locomotive Works. The Denver & Rio Grande has placed 10 loomotives with the American Locomotive Co. Light rail demand is fair with prices ranging from 2.15c to 2.25c, base Pittsburgh.

Car Buying Light in East

New York, Feb. 13.—Car buying in this district continues relatively light. A fair number of small orders are noted but the aggregate number of cars involved is not large. Locomotive demand, however, is holding up well, the largest order calling for 20 for the Denver, Rio Grande & Western, awarded to the American Locomotive Co. The Mobile & Ohio reported last week as placing 10 locomotives with the Lima Locomotive Works, has in addition placed three with the Baldwin Locomotive Works. Among contemplated purchases are 20 for the New York Central, 50 for the Northern Pacific and 25 for the Great Northern. The New York, Ontario & Western is also understood to be figuring on a few locomotives.

Regular Ordering Rate Preserved

Pittsburgh, Feb. 13.—Just the regular rate of ordering of light rails is noted as coming from coal mining interests in various directions. One day will bring several carload orders, including one or two for two or more carloads at a time while another day none will be received. Specifications to large makers, such as the Carnegie Steel Co., continue heavy from both nearby and distant consuming points. The majority of these continue to come from coal mine operators. The market is quotable at 2.15c to 2.25c, base Pittsburgh, although no large sales are recorded as yet at the maximum figure reached by an advance of $2 per ton.

Demand for accessories continues more or less intermittent. Occasionally railroads find their consumption exceeding estimated requirements which necessitates further entering into the market for spikes, tie plates, etc. This explains some recent buying of 500 to 1000 kegs of spikes. The Atlantic Coast Line railroad is understood to have closed upon a comparatively small amount in the East at the going market level. Standard spikes cannot be obtained for less than a minimum of 2.90c; small boat and barge spikes continue quotable at 3.50c; track bolts are quotable at 3.85c to 4.50c, and tie plates at $49 to $53 per ton.

CAR ORDERS PLACED

Illinois Central railroad, 125 cabooses, to American Car & Foundry Co.

Union Pacific railroad, 10 baggage cars, to American Car & Foundry Co.

Gulf Refining Co., 100 tanks cars, to Standard Steel Car Co.

Buffalo, Rochester & Pittsburgh, 16 miscellaneous coaches, to American Car & Foundry Co.; 50 cabooses to Standard Steel Car Co.; and 25 dump cars to Clarke Car Co.

Central of New Jersey, 200 box cars repiars, to Standard Steel Car Co.

Canadian National, 600 auto cars to Canadian Car & Foundry Co. and 400 to National Steel Car Corp.

CAR ORDERS PENDING

St. Louis-San Francisco, 1000 gondola bodies; bids asked.

Delaware, Lackawanna & Western, 300 auto cars; bids asked.

Southern Pacific, 150 miscellaneous coaches, bids asked.

Made Vice President

Philadelphia, Feb. 13.—W. W. Lukens has been made a vice president of the Alan Wood Iron & Steel Co. which has increased its number of vice presidents to four. Mr. Lukens has been connected with the Alan Wood company for many years and several years ago became president when R. G. Wood retired from that office to become chairman of the board. Mr. Lukens later resigned because of ill health after which the presidency was resumed by R. G. Wood.

Locomotive Orders Grow

Washington, Feb. 13.—Deliveries of locomotives during January according to the census bureau's reports were 229 against 210 in December and 74 in January 1922. Unfilled orders of various makers totaled 1788 against 1592 at the end of December and 207 on the corresponding date a year ago.

Heads Research Division

The Atlas Steel Corp., Dunkirk, N. Y., has established a research division of its metallurgical department. The division is under the direction of Edgar C. Bain, who has been research metallurgist at the Cleveland Wire Division of the General Electric Co., and retains contact with them in a consulting capacity. Mr. Bain has done much pioneer work in the X-ray spectrographic study of the crystal structure of metals, and is the author of a number of papers on that subject.

Building Bars Are Quieter

Tonnage Placed Falls Off Sharply while Inquiries Are Maintained in Fair Volume—Prices Are Strong

REINFORCING BAR PRICES, PAGE 480

Pittsburgh, Feb. 13.—While the Carnegie Steel Co. and one or two independent producers still have an official quotation of 2.10c on reinforcing concrete bars, it would be difficult to place any business for prompt delivery at that figure. The 2.10c level applies in connection with many contracts which are now being specified against. Around 2.25c is being quoted by one mill and up to 2.50c is being paid another interest for bars from warehouse stocks. Even in advance of that maximum is understood to have been done recently on a small quantity wanted for immediate delivery. Several awards below 100 tons each have been noted and one or two in excess of that amount.

More Tonnage Is Placed

Cleveland, Feb. 13.—Placing of concrete bar tonnages in this territory has been accelerated slightly during the past week, although the total did not aggregate over 1000 tons. Probably some of the activity may be attributed to the fact that buyers are becoming convinced prices will continue upward and that it will be more difficult to have their requirements covered later. One job calling for approximately 300 tons, and pending for several weeks, has been reported placed. Several others, requiring from 100 to 400 tons each are expected to be closed within the next few days. Prices remain the same as for the past few weeks. Rail steel bars are quoted at from 2.00c to 2.10c, Pittsburgh, although the minimum of 2.00c practically has disappeared from the market. Bars from new steel are quoted at 2.10c to 2.20c, Pittsburgh.

Lull in Bar Buying

Chicago, Feb. 13.—After the heavy booking of reinforcing bars 10 days ago, comparatively little business has been taken during the past week. The rush to cover for nearby delivery was so strong that it has brought a lull which probably will require some time to overcome. The market is stronger and seems entirely firm at 2.75c, Chicago warehouse, shading not being apparent. Numerous small lots, under 100 tons, are being booked and some bulk sales have been made also. One interest has closed on about 2000 tons of various size lots. The matter of delivery is coming to be more important as time passes and sellers are becoming cautious in obligating themselves for definite delivery within a short time.

CONTRACTS PLACED

Awards reported this week ..... 1,225 tons
Awards reported last week .....13,602 tons
Awards reported two weeks ago.. 5,275 tons

300 tons, building for General Fire Extinguisher Co., Warren, O., reported placed.
250 tons, hotel at Sixty-fourth street and Cottage Grove avenue, Chicago for Garden Building Corp., to Kalman Steel Co.
190 tons, building for Quick Service Auto Laundry Co., Cincinnati, to Concrete Steel Co.
150 tons, for road work in state of Ohio, to Concrete Steel Co.
125 tons, Baptist hospital, Louisville, Ky., to Concrete Steel Co.
110 tons junior high school, Holland, Mich., to Kalman Steel Co.
100 tons, railroad shops for Pere Marquette railroad, Grand Rapids, Mich., to Calumet Steel Co.

CONTRACTS PENDING

650 tons, Crawford station of Commonwealth Edison Co., Chicago; bids in.
200 tons, Monroe Drug Co., Quincy, Ill.; bids in.
175 tons, Allied Packing Co., Chicago; bids asked.
100 tons, administration and medical science buildings, Ohio State university, Columbus, O.; bids asked.
100 tons, St. Anthony hospital, Louisville, Ky.; bids asked.
100 tons, Hotel Cannon, Danville, Ill.; bids in.
Tonnage not stated, Homan avenue shops, Peoples Gas Light & Coke Co., Chicago; bids opened Feb. 22.

Tubular Goods

Continue in Heavy Demand—Expect Large Orders for Cast

PIPE PRICES, PAGE 480 AND 548

Pittsburgh, Feb. 13.—The fact that orders have been taken at the new card rates of Feb. 1-3 is indicative of the strength of the tubular goods market. Jobbers and large users are anxious to place tonnage and do not consider price so much as formerly; they would be glad to furnish immediate specifications if they could get desired deliveries. Makers find themselves so filled up with business they have no tonnage open for weeks, and in some cases months. They are selecting orders with care. Standard full-weight merchant pipe deliveries in lapweld on certain sizes are 6 to 8 weeks deferred while in buttweld from 8 to 12 weeks is the best promise obtainable and then only on certain sizes. The largest deal in line pipe before makers since the Sinclair order of several months ago, has been divided between the National Tube Co. and the Steel & Tube Co. of America and is the requirement of the Hope Engineering Co. for a line between Munroe and Alexandria, La., for approximately 100 miles of light weight 12-inch. This involves approximately 9000 tons and is the order which one year ago was placed with a valley producer who subsequently returned it because specifications were not forthcoming in the required two months. While the demand from western and southern jobbers still is huge, lately the requests from Pennsylvania, Ohio and West Virginia jobbers have been increasing. Some of the Pennsylvania supply houses for instance, find themselves short of material.

Biggest Inquiry to Come

Chicago, Feb. 13.—Although considerable buying of cast iron pipe has been done since the first of the year, this apparently is business left over from last year's requirements. It seems likely the heaviest business for this season's extensions is yet to be closed. Under these circumstances, it may be difficult for cities to obtain as much as they need, inasmuch as pipe makers find their books well filled and probably cannot accommodate all the business which will be offered. The National Cast Iron Pipe Co. has been awarded 700 tons at Kenosha, Wis. and 260 tons at Fond du Lac, Wis. The United States Cast Iron Pipe & Foundry Co. has taken 400 tons at Rockford, Ill. The Milwaukee gas producer is understood to have bought part of its gas pipe requirements from the United States Cast Iron Pipe & Foundry Co.

Activity Is Reported

New York, Feb. 13.—The city of Boston closes today on 1600 tons of 60-inch cast iron pipe. The United States Cast Iron Pipe & Foundry Co. is understood to be low bidder on 3000 tons for Woonsocket, R. I. Contractors' figures close today on 600 tons for Staten Island. The market generally is strong and active.

Demand Continues to Grow

Birmingham, Ala., Feb. 12.—Cast iron pipe demand continues strong. Producers of pressure pipe are receiving lettings every week and indications point to more business. Announcement is made that the United States Cast Iron Pipe & Foundry Co. will install five more deLavaud machines. The National Cast Iron Pipe company is also building an addition. Quotations continue firm. In fact, another advance is not improbable. The make of this soil pipe will be materially increased next month when the McWane Cast Iron Pipe Co. plant is placed in operation. The Ajax foundry at Anniston, which is being converted into a pipe foundry is in operation.

Nail and Wire

Prices Are Advanced Further As Heavy Demand Continues

WIRE PRICES, PAGE 480

Pittsburgh, Feb. 13.—Under the avalanche of orders and specifications for wire products, the market has taken on more strength. This is evidenced by the increased prices appearing from time to time. On Saturday last the Cambria Steel Co. advanced wire and nails $4 per ton to 2.75c and 3.00c base Pittsburgh respectively. The Pittsburgh Steel Co. has advanced plain wire $2 per ton to 2.65c as has the American Steel & Wire Co., which finally has inaugurated an advance on wire nails, going from 2.70c to 2.80c, the level reached by independents some time ago. The 2.80c figure on nails continues quoted by the Pittsburgh Steel Co. and other independent makers. The last two named interests likewise have advanced woven wire fencing $3 per ton, to 66½ per cent off to retailers. No change is noted in barbed wire. Other makers doubtless will inaugurate similar advances. The general opinion seems to be that nails not yet are high enough with a spread of only $3 per ton over plain wire. Demand is heavy from jobbers. Heavy consumption seems assured for several months. Cement-coated nails have been advanced 20 cents per keg to $2.50, base Pittsburgh, by the Pittsburgh Steel Co. and others.

Wire Nails Advance $2

Chicago, Feb. 13.—An advance of $2 per ton on wire nails brings the

leading producer to the level at which independent mills have been quoting. The present quotation on plain wire is 2.65c, Pittsburgh, annealed wire 2.80c, Pittsburgh, and nails 2.80c, Pittsburgh. Demand for all forms of wire and nails continues strong and producers find it necessary to limit the tonnage they will allow consumers to book. In this way delivery dates are held about even.

Packers' Needs

Continue To Take the Bulk of Tin Plate Tonnage

TIN PLATE PRICES, PAGE 580

Pittsburgh, Feb. 13.—Packers' cans continue to take the bulk of the tin plate output and specifications are heavy. It is expected 1923 will develop into a record-breaking year from a fish, fruit and vegetable packing standpoint and that heavy tonnages also will be utilized for oils, varnishes and other commodities. Barring unforeseen contingencies, tin plate production this year should set a new high record. New business is somewhat limited although various consumers have sought to increase their orders. From time to time a new buyer enters the market for fair sized lots for immediate shipment but finds so much tonnage ahead of him that he either buys stock plate or decides not to buy. Most makers are well filled up for some time to come, some well into the second quarter on full operation. The American Sheet & Tin Plate Co. continues to have difficulty in getting tin bar supplies to its American works and its operations average 80 per cent. Arrangements are expected to be completed this week, however, for the shipment of steel from this section to Ellwood, Ind., so that the average is due to increase. Independents in the Pennsylvania and Ohio districts are averaging 85 or 90 per cent of capacity. The market remains quotable at $4.75 per base box of 100 pounds, Pittsburgh.

Schwab Is Optimistic as He Sails for Europe

Charles M. Schwab, chairman of the Bethlehem Steel Corp. spoke optimistically of conditions when departing for Europe on the OLYMPIC, Feb. 10.

"Steel and iron production is at its highest peak," he said, "and I go aboard feeling that never before has the steel business been so prosperous. We now are limited in our production by the lack of labor, and the capacity of the railroads to handle the finished and other products. The roads, too, I understand, are handicapped by the lack of labor. We can produce no more steel than we are doing now unless we secure more labor."

In speaking of the ship subsidy bill, Mr. Schwab said that he was in favor of it, and felt convinced that it would go through. He told reporters he would celebrate his sixty-first birthday Feb. 18 and that it would be his sixty-first crossing of the Atlantic in 33 years. On the trip he is occupying the same cabin he had in October, 1914, when he saw the British superdreadnaught AUDACIOUS blow up after striking a mine off Lough Swilly in the north of Ireland.

The Nonferrous Metals

Copper and Its Products in Strong Domestic Market and Tin Also Up but Lead and Zinc Steady

	Copper Electro delivered	Copper Lake delivered	Spot Straits New York	†Lead New York basis	Zinc St. Louis basis	Spot† aluminum	Spot antimony	Nickel spot
Feb. 7.....	15.00	15.12½	40 37½	8.15	7.10	23.00	7.12½	28.00
Feb. 8.....	15.00	15.12½	40.25	8.15	7.10	23.00	7.12½	28.00
Feb. 9.....	15.12½	15.25	40.50	8.15	7.07½	23.00	7.12½	28.00
Feb. 12.....	Holiday.							
Feb. 13.....	15.12½	15.25	41.25	8.15	7.07½	23.00	7.16½	28.00

†Outside market quotation.

NEW YORK, Feb. 13.—All the metal markets have been firm to strong and fairly active in the past week.

Both the London and American markets have to a large extent been ignoring the Ruhr situation, although some slight influence of the dislocation of continental industry is being noticed. Heavy American consumption of metals and improving British industry have offset the continental difficulties thus far. Transportation has continued a market factor in this country, premium prices being paid to convenient smelters, while pressure for immediate shipments has been a feature of the market.

Sales of copper for prompt and second quarter delivery have been made at 15.12½c, delivered, and all leading agencies have adopted this price, as well as the custom smelters. For third quarter sellers are now asking 15.25c, delivered. Business in wire products and brass has again been exceptionally heavy and consequent covering movement in copper has resulted.

All brass and copper products went up ¼ cent a pound over the week-end, while seamless tubes went up ½ cent. In two previous advances of mill products the latter shapes were not included.

Casting copper prices have risen to 14.60c, refinery, on further large consumer buying, and some Chinese demand.

The zinc market has moved back and forth within a range of 7.05c to 7.10c, East St. Louis, for prompt shipment, with some surface weakness, due to resale offering by dealers who want to take profits. Fundamentally, the situation has been unchanged, some of the largest smelters being booked up two months ahead. Other smelters have been willing to take futures at five points discount per month. The American Zinc institute zinc figures show smelter stocks as of Feb. 1 amounting to 16,574 tons, the smallest in at least three years. Production in January was 46,317 tons, the largest since March, 1920; shipments of 47,995 tons were the largest since May, 1920.

The lead market has been extremely irregular, with broad premiums paid for prompt shipments and for special brands. Certain brands now are obtainable for fairly early shipment at 7.90c, St. Louis, and at 8c, New York from the leading interest. Good sized sales, however, have been made at 8.15c, East St. Louis and up to 8.25c, New York. The general lead situation continues strong, here and abroad. Moderate parcels of Spanish lead have been diverted from the Ruhr district and sold here, but not enough to affect the market.

Tin prices reached the high point for two years the past week at 41.25c today for spot Straits. Future shipments have been quoted about ⅛c under spot, with intermediate deliveries, late February and March, about ¼c under spot. The market has been moderately active. Ninety-nine per cent tin has been quoted about 1 to 1¼ cents under Straits.

Antimony has been in light demand at 7.12½c, duty paid, for spot carlots.

Inquiry for ingot aluminum has been light, consumers being well covered under contract for the first half of this year. Importers' prices are unchanged at 23c, New York, and 24c, New York, for 98 to 99 per cent and 99 per cent grades of virgin ingot, respectively. The domestic producer continues to quote 24c and 25c.

Mill Products

Base prices cents per pound, f.o.b. mill

SHEETS	
Copper, hot rolled 24 oz., min.	22.75
High. brass	19.50
¾inc, ga. 9 to 18 (plates ¼c less)	9.00 to 9.50
Lead, full sheets (cut ¼c more).	11.25
Aluminum, base 18 ga. and up...	36.40
SEAMLESS TUBES	
High brass	24.00
opper	25.75
RODS	
High brass, round, ⅜ to 2½ inch	17.75
Naval brass rod	20.00
WIRE	
Copper	17.00 to 17.50
High brass	20.00

Old Metals

Dealers' buying prices cents per pound

HEAVY RED BRASS	
leveland	10.00 to 10.50
New York	9.75
Chicago	10.50
HEAVY YELLOW BRASS	
New York	6.50 to 7.00
Chicago	8.25
Cleveland	7.00 to 7.50
ZINC	
New York	4.25 to 4.50
Cleveland	4.00 to 4.50
HEAVY COPPER AND WIRE	
Cleveland	12.25 to 12.75
New York	11.75 to 12.00
Chicago	12.75
RED BRASS TURNINGS	
New York	8.00 to 8.50
Cleveland	9.00 to 9.25
Chicago	9.00
YELLOW BRASS TUBING	
Cleveland	7.00 to 7.50
NO. 1 BRASS ROD TURNINGS	
Cleveland	7.00 to 7.50
New York	7.00
Chicago	7.75
ALUMINUM BORINGS	
Cleveland	11.00 to 12.00

Senate Expedites British Refunding Bill

Washington, Feb. 13.—Two weeks from next Sunday the present session of congress ends. The present intention is for congress to remain at home until the first monday in December, giving the country its first legislative holiday since 1916. All measures now before both houses lapse on March 4, because a new congress is to come in, and failure of any bill or resolution to pass means reintroduction in the next session and reenactment of all committee and hearing proceedings.

The outstanding issue today probably is the proposal for refunding the British debt. This has passed the house. Its passage in the senate seems certain, but not without some opposition and delay. Night sessions of the senate on the refunding matter are in prospect.

The outlook continues that the administration ship subsidy bill cannot pass. Ad-Administration forces have been inform by some western senators that by proper amendment the bill could get through the senate. This would involve restoration of the Madden amendment permitting congress each year to pass upon contracts of the shipping board with vessel operators and increasing subsidies to operators of freight ships at the expense of operators of passenger vessels. The LaFollette group is determined to talk the bill to death, whatever its form. Night sessions are planned for the debt bill to give over the days to the subsidy bill, but passage of the subsidy at this session would be contrary to every forecast.

The 3 per cent immigration act will run its full course, until June 30, 1924. As a substitute for the senate bill admitting 25,000 Armenian orphans in excess of the present quota for Armenia the house immigration committee has reported out its bill basing quotas upon the 1890 census instead of that of 1910 and reducing the percentage from 3 to 2, after a basic allotment of 400 arrivals to every nation. The bill represents what the house committee will endeavor to make the successor to the 3 per cent act after a year from June. The committee hopes at this time merely to lay its proposal before the public.

The senate has joined with the house in repudiating the decree of the budget director that only $27,000,000 should be spent for rivers and harbors improvements in the fiscal year beginning July 1, 1923, and has voted slightly more than $56,000,000. The President will be compelled to sign the army appropriation bill carrying this huge expenditure but will direct army engineers to spend no more than the budget director has recommended.

May Offer Merger Notes

The Youngstown Sheet & Tube Co., is expected to offer for sale between $30,000,000 and $35,000,000 of 20-year debenture notes to finance its purchase of the Steel & Tube Co. of America. This information was contained in a letter to stockholders sent by J. B. Kennedy, chairman of the Brier Hill Steel Co., which has been merged with the Youngstown Sheet & Tube Co. Holders of Brier Hill preferred stock may retire it at $105 per share or exchange for preferred stock of the Youngstown Sheet & Tube Co. The option must be exercised by March 1.

Company Reports Loss

The Transue & Williams Steel Forging Corp., Alliance, O., reports a net loss of $71,137 for the year ended Dec. 31, after charges and taxes, against a net profit of $43,138 in 1921. The consolidated balance sheet showed among its assets securities valued at $1,424,787, cash on hand, $21,330 and notes and accounts receivable, $348,305. The income accounts follows:

Gross sales	$1,170,183	$3,665,444
Deficit after charges	71,137	†43,138
Fed. taxes		
Net loss	$71,137	†$43,138
Dividends		300,000
Deficit	$71,137	$256,862

†Income.

Iron Stocks Decline

Pig iron stocks in southern territory declined heavily during the month of January or from a total of 74,946 tons to 53,230 tons. On Feb. 1 foundry iron stocks amounted to 41,026 tons compared with 53,276 tons one month previously; machine cast, 2183 tons compared with 6807 tons, and basic, 10,021 tons as against 14,413 tons.

Quotation Is Corrected

Through a typographical error the quotation of malleable pig iron, Buffalo, in the weekly record of prices on page 410 of the Feb. 8 issue of IRON TRADE REVIEW was given incorrectly as $20.50. The proper figure is $28.50.

Rebuilding Plate Mill

Philadelphia, Feb. 13.—Work has been started by the Pottstown Iron Co., Pottstown, Pa., on the rebuilding of its 112-inch sheared plate mill, which is operated under lease by the Glasgow Iron Co.

Steel Treaters Conduct Sectional Meeting

Several technical papers were presented and discussed at the winter sectional meeting of the American Society for Steel Treating which was held in Chicago on Thursday and Friday of last week, Feb. 8 and 9. The City club served as the meeting headquarters. Registration began Thursday morning and was followed by a luncheon at noon. At the technical meeting which was conducted in the afternoon, three papers were read. The first one, "Characteristics of Air Cooling Curves," by E. J. Janitzky, metallurgist, Illinois Steel Co., had been preprinted in the society's *Transactions* and following its reading brought out much valuable discussion. R. G. Guthrie, engineer, Peoples Gas Light & Coke Co., Chicago, read the second paper which discussed light, dealing specifically with incident, monochromatic and polarized light as used in making metallographic examinations. The third paper on Thursday afternoon was presented by E. E. Thum, associate editor *Chemical & Metallurgical Engineering*, New York, his "subject being "Educating the Metallurgist and the Management."

Following the dinner on Thursday evening at which over 250 attended, another technical paper was presented. This paper was entitled "Effect of High Temperature Quenching on Microstructure of High Carbon Steels," and was read by Howard Scott, associate physicist, bureau of standards, Washington. A meeting of the board of directors of the society was held on Friday morning, however, only routine matters were considered. Three inspection trips were also conducted on Friday morning, parties visiting the Illinois Steel Co., the Interstate Iron & Steel Co. and the Ingalls-Shepard division of the Wyman-Gordon Co., Harvey, Ill. Total registration for the meeting was about 250.

Fact Finders Still Busy

Washington, Feb. 13.—Now that a bituminous coal strike on April 1 has been averted by continuance of the present scale another year the federal coal fact-finding commission will inaugurate an investigation of the comparative efficiency of mining in the union and nonunion fields. The transportation situation and storage are two problems that will be more intensively studied, with the commission relieved of any responsibility for changes in wages or working conditions for a year.

Testify for Pittsburgh Plus Plan

President E. J. Buffington of Illnois Steel Co. Describes Basis and Growth of Custom—Practice Declared To Be Result of Conditions of Supply and Demand—Other Chicago Steel Officials on Stand

CHICAGO, Feb. 13.—Evidence before the examiner for the federal trade commission in the so-called Pittsburgh plus hearing has been given the past week by officials of the Illinois Steel Co., in behalf of the United States Steel Corp., respondent to the complaint. Probably the most important testimony was given by E. J. Buffington, president of the Illinois Steel Co. from its formation. He was followed by E. S. Mills, general sales manager. Examination of E. V. Winter, statistician for this company, on the exhibits of contracts and invoices, was completed early in the week.

The respondent is adducing evidence in support of the assertion that the custom of quoting steel manufactured at Chicago at approximately the price quoted by Pittsburgh makers, plus the freight from Pittsburgh point of delivery, has been in vogue from the beginning of the steel industry and is a natural outcome of competitive conditions in the trade. Evidence also is being put into the record that the production of steel in the Chicago district is inadequate to meet the needs of consumers drawing their supply normally from Chicago, and that more or less tonnage in periods of normal demand is bought from eastern producers.

On the other hand counsel for the commission in cross examination sought to show that part of the output of Chicago mills is sold to consumers east of Chicago, where freight must be deducted, rather than added, indicating there must be a surplus of steel over that needed by western users.

Mr. Buffington gave an interesting view of the growth and development of the steel industry at Chicago from an early date. He has been president of the Illinois Steel Co. from 1899 and for 15 years previously had been engaged in this line of business, having been treasurer and sales manager of a wire and nail company with a plant at Covington, Ky., and later at Anderson, Ind. He testified that in the early days his company's wire and nails were sold mostly in a westward direction, at delivered prices representing approximately the prices of Pittsburgh competitors and freight from Pittsburgh. Freight rates then were a matter of negotiation and it was necessary to keep in touch with rates to know what was being charged various competitors for transportation.

Trade Paper Quotations Accepted by Mills

E. S. MILLS, general sales manager for the Illinois Steel Co., established the value and reliability of iron and steel trade paper quotations during his examination. Having stated that at times contracts were made at "prices prevailing at time of delivery", he was asked to explain how the price was established. His reply was that the composite price pages of the trade papers recognized generally as authorities were relied on to establish the going price at any given time.

Mr. Buffington testified that the prices at which steel is sold are arrived at by negotiation with the customer, in competition with other producers, both those in the Chicago district, in Pittsburgh and in the East. In this competition prices usually have been the Pittsburgh quotation and freight from that point, the Chicago producer having the advantage of location as to freight. At times this general rule has been abandoned and steel has been sold much below the Pittsburgh price.

After telling what equipment the Illinois Steel Co. had when he became president he described the addition of various mills at the several plants and the construction of the Gary works in Indiana. He had recommended several times that substantial additions be made to productive capacity at Chicago, as there appeared opportunity to sell a large additional tonnage in that district. Before the construction of the Gary works, the Illinois Steel Co. was selling agent for the Carnegie Steel Co., especially for structural shapes.

Finally in 1905 the Steel Corp. appointed a committee to go over the situation and recommend what should be done, with the result that the Gary works were built. The report of this committee was offered as an exhibit and after objection by counsel for the commission, was admitted, with the objection noted. The conclusion of this committee was at least 2,000,000 tons of steel per year could be produced and sold in the Chicago district, indicating that production at Chicago at that time was considerably below normal needs.

Later in his testimony Mr. Buffington showed that the Gary plant had been increased greatly until its output now is almost double the 2,000,000 tons then thought possible to market. At the same time other steel producers, notably the Inland Steel Co. and the Steel & Tube Co. of America, have produced much larger tonnages than before, all of which is being absorbed in times of normal demand.

Under cross questioning Mr. Buffington stated the policy of the Illinois Steel Co. is always to make deliveries of steel in substantially the rotation in which orders are booked and that this company never charges a premium for placing one order ahead of another. Mr. Buffington indicated, however, that when a regular customer finds himself in dire need of steel to continue operations the company endeavors to supply him if this can be done without detriment to other customers. In 1920, he testified, there were times when Chicago steel was sold at $15 to $30 per ton under prices asked by Pittsburgh competitors, due to the policy of his company of not exacting premiums for early delivery. Asked as to the accuracy and value of trade paper quotations on steel, Mr. Buffington asserted they are usually correct and reliable, but "do not always report the lowest prices at which sales are made."

E. S. Mills, general sales manager for the Illinois Steel Co., testified that prices at which steel is sold are arrived at by competitive negotiation, quotations by Pittsburgh makers being an important factor. Usually prices are approximately the Pittsburgh price and freight from Pittsburgh to the point of delivery. All sales are at delivered price, though cross examination brought out that quotations usually are made for convenience on a Pittsburgh base, this being best understood by both buyer and seller, inasmuch as freight to the varied points of delivery differs in each case.

Cross examination brought out the fact from Mr. Mills that the Illinois Steel Co. ships about 7 per cent of its production to points east of a north and south line 100 miles east of Chicago and about 4 per cent additional into territory between that line and a north and south line through the city of Chicago. This includes the greater portion of the electric steel made by this company, this being used mostly by automotive

manufacturers.

L. E. Block, chairman of the board of the Inland Steel Co., revealed some of the romance of the steel industry at Chicago in tracing the growth of the Inland Steel Co. from its modest beginning to its present position of permanence and of large production. This testimony was presented to sustain the contention of the respondent that present trade customs tend to increase the industry's production at Chicago, and that steady growth of the Steel corporation and of its independent competitors has gone forward under this plan of doing business. Adjournment to Tuesday, Feb. 13 was taken Friday noon.

Abrasive Makers Form Export Corporation

Washington, Feb. 13.—Ten makers of abrasives in New York, Illinois, Pennsylvania, Massachusetts, Minnesota and Wisconsin have formed the American Surface Abrasives Export Corp. under the terms of the Webb-Pomerene act and have filed papers with the federal trade commission.

L. S. Greenleaf is president of the corporation, E. C. Wright is vice president, and J. S. Frazee secretary and treasurer. The member companies of the corporation are: Herman Behr & Co., Brooklyn, N. Y.; Armour Sand Paper Works, Chicago; H. H. Barton & Sons, Philadelphia; U. S. Sand Paper Co., Williamsport, Pa.; Manning Abrasive Co. and Minnesota Mining & Mfg. Co., Troy N. Y.; American Glue Co., Boston; Carborundum Co., Niagara Falls, N. Y.; Wausau Abrasives Co., Wausau, Wis., and Baeder Adamson Co., Philadelphia.

Six Out of 254 Strikes in Steel Industry

Washington, Feb. 13.—Sixty strikes and lockouts ended favorably to employers in the third quarter of 1922; 75 ended favorable to employes, and 25 were compromised, the department of labor reports. In this quarter, only 254 strikes and lockouts were inaugurated, compared with 414 in the same quarter of 1921. Of these 254 strikes and lockouts, 57 occurred in New York, 31 in Massachusetts, 23 in Pennsylvania, 20 in Ohio, 19 in Illinois and 17 in New Jersey. The greatest number, 63, occurred in the clothing industry. The railroads accounted for 43, the metal trades for 19 and the iron and steel industry proper for six. Fifty-four resulted from demands for increased wages and 42 because wages were reduced.

Ingot Production

With 3,251,694 Tons Is Highest Output Since March, 1920

One of the largest increases registered by steel ingot production in recent years was made during the month of January. According to statistics compiled by the American Iron and Steel institute from production figures reported by 30 companies which in 1921 made 89.5 per cent of the total for the country, the output of steel ingots in January totaled 3,251,694 gross tons. The output for December was 2,779,890 tons. The increase of January over December, therefore was 471,804 tons or 17 per cent. The January production was the first to total over three million tons in 27 months or since October, 1920. The January output was the highest since March, 1920, when 3,299,049 tons was made by this proportion of capacity.

Following are the institute's production figures for 1922 and January, 1923:

1922	Open hearth	Bessemer	All other	Total
Jan....	1,260,809	331,851	822	1,593,482
Feb...	1,395,835	348,571	616	1,745,022
March..	1,918,570	451,386	795	2,370,751
April...	1,997,465	445,939	1,109	2,444,513
May...	2,214,774	494,893	1,474	2,711,141
June...	2,143,708	487,851	2,918	2,634,477
July ..	2,020,572	464,047	2,485	2,487,104
Aug. ..	1,807,310	404,379	2,893	2,214,582
Sept...	1,911,147	460,127	2,505	2,373,779
Oct. ..	2,352,207	518,010	2,198	2,872,415
Nov. ..	2,360,903	525,945	2,449	2,889,297
Dec....	2,241,104	536,214	2,572	2,779,890
Total for year	23,624,404	5,469,213	22,836	29,116,453
Jan. 1923	2,571,491	677,486	2,717	3,251,694

Average daily production of the 30 companies in January was 120,433 tons, as compared with 111,195 tons in December and an increase of 9238 tons. This gain is accentuated by the fact that January was a month of 27 working days as compared with 25 in December. The increase represents an 8.3 per cent gain over December. Upon the average daily production of the 30 companies and the factor of 87.5 supplied by the institute, the average daily rate of production for the whole country was 137,637 tons. As compared with the 127,080-ton daily rate of the month before, the January figure is a gain of 10,557 tons per day.

Computed upon the average daily output of January and 311 working days per year, the approximate annual rate for the 30 companies during the month was about 37,450,000 tons and about 2,870,000 tons better than the indicated rate of December. Using the same basis, the approximate annual rate of output for the entire country in January was about 42,800,000 tons. As compared with the 39,520,000-ton rate of December the January rate shows an increase of about 3,280,000 tons. The annual indicated rate of production in January was about 123 per cent better than the total production for 1921 and was only about 1.9 per cent less than the record output of all time in 1917.

Ceramists Elect Officers

Twenty-five years of service to the ceramic industry are being celebrated by members of the American Ceramic society at the "silver jubilee" convention being held Feb. 12-16 at Hotels William Penn and Fort Pitt, Pittsburgh. More than 600 members and guests are in attendance.

The opening sessions on Monday were followed by a banquet in the evening in honor of the charter members of the society. The following officers were elected: President, A. F. Greaves-Walker, American Refractories Co., Pittsburgh; vice president, R. D. Landrum, Cleveland; secretary, Ross C. Purdy, Ohio State university, Columbus, O.; treasurer, Ralph Hursh, University of Illinois, Urbana, Ill.; and trustees, R. M. Howe, Mellon institute, Pittsburgh; B. E. Salisbury, Syracuse, N. Y.; F. H. Riddle, Champion Porcelain Co., Detroit, and R. R. Danielson, Washington.

An exhibit of refractories and other ceramic products is being held in the Port Pitt hotel.

Unfilled Bookings Gain

Unfilled bookings of the United States Steel Corp., as of Jan. 31, aggregated 6,910,776 tons, an increase of 165,073 tons or 2.44 per cent. This is the first advance since October, 1922, and brings the total up to the highest figure since February 1921, when bookings aggregated 6,933,867 tons. The record unfilled tonnage ever reported by the Steel corporation was 12,183,083 at the end of April, 1917. Further comparisons follow:

Date	Total	Change, tonnage	Change, per cent	
Dec. 31, 1922...	6,745,703	94,539—	1.39	—
Nov. 30, 1922...	6,840,242	62,045—	.89	—
Oct. 31, 1922...	6,902,287	210,680+	3.14	+
Sept. 30, 1922...	6,691,607	741,502+	12.4	+
Aug. 31, 1922...	5,950,105	173,944+	3.01	+
July 31, 1922...	5,776,161	140,630+	2.48	+
June 30, 1922...	5,635,531	381,303+	7.2	+
May 31, 1922...	5,254,228	157,311+	3.08	+
April 30, 1922...	5,096,917	602,769+	13.4	+
Mar. 31, 1922...	4,494,148	353,079+	8.5	+
Feb. 28, 1922...	4,141,069	100,609—	2.307	—
Jan. 31, 1922...	4,241,678	26,736—	0.0063	—
Dec. 31, 1921...	4,268,414	17,872+	0 004	+
Nov. 30, 1921...	4,250,542	36,287—	0.84	—
Oct. 31, 1921...	4,286,829	273,841—	6.004	—
Sept. 30, 1921...	4,560,670	28,744+	0.63	+
Aug. 31, 1921...	4,531,926	298,398—	6.3	—
July 31, 1921...	4,830,324	287,544—	5.59	—
June 30, 1921...	5,117,868	364,619—	6.2	—
May 31, 1921...	5,482,487	362,737—	6.2	—
April 30, 1921...	5,845,224	439,541—	6.8	—
Mar. 31, 1921...	6,284,765	649,102—	10.32	—
Feb. 28, 1921...	6,933,867	639,297—	8.21	—
Jan. 31, 1921...	7,573,164	574,958—	7.59	—

Western Prices Advance

Foreign Pig Iron Advance May Lead To Domestic Buying—Building Operations Gain—Demand for Structural Shapes Continues Heavy

SAN FRANCISCO, Feb. 9.—The local market for iron and steel products has witnessed advances in prices on a number of items and a lengthening out on deliveries during the past week. General business conditions continue to show improvement and construction activity is growing. Building permits issued in San Francisco during January numbered 718 and totaled $3,205,811, a gain of over $1,500,000 over January of a year ago. Los Angeles reports 4646 permits issued with a valuation of $11,258,517 as compared with 3416 permits and an estimated value of $7,975,168 for January, 1922.

Pig Iron and Coke

With prices advancing on foreign pig iron, southern furnace representatives expect shortly to be able to secure business from consumers who heretofore have been buying the foreign material at prices of from $2 to $5 a ton, delivered, under those quoted for the domestic iron. Sales locally have not involved large tonnages of late and have been bringing around $33 a ton c.i.f. San Francisco. A Los Angeles interest recently received 400 tons of Belgian high phosphorus iron at $24.25 a ton delivered. This material ran 2.5 to 3.0 in silicon, .30 to .50 in manganese, 1.75 to 2.0 in phosphorus and .05 in sulphur. Importers are now asking around $27 for this analysis of iron. Little interest has transpired in the coke market, such sales as are being made involving small tonnages only. The Southern Pacific Co. recently placed an order for 500 tons of foundry coke.

Bars, Plates and Shapes

Effective Feb. 8 the local bar mills advanced prices from 2.70c to 2.80c f.o.b. San Francisco for merchant bars. No announcement has been made regarding reinforcing material but an advance over the present 2.95c f.o.b. San Francisco price is expected. Bookings of merchant bars by local mills is reported as being the best in over two years and the same applies to concrete bar bookings. Awards of reinforcing bars during the past week in which large tonnages were involved have been light though a most satisfactory volume of smaller awards have been made. The Union Tool Co., Torrance, recently placed an order for 438 tons of large forging rounds at a price understood to have been 2.10c, base Pittsburgh. Cold-rolled shafting is more active and prices appear to be firm at the new level, namely 2.65c base Pittsburgh.

The bolt, nut and rivet market is active and the tone of the market is firmer than it was thirty days ago. While occasionally a desirable tonnage brings out a lower price than the prevailing one, the bulk of the business is going at the established market figure. The Standard Oil Co. and the Southern Pacific Co. recently placed fair sized rivet tonnages at a price somewhat under the quoted market price. Small rivets are bringing 65-5 off, while large and small machine bolts cut thread are being quoted at 50-10-10 and 50-10 off respectively.

Hoop and band representatives report a much better demand for their products. Prices have stiffened and 2.90c base Pittsburgh now appears to be the minimum applying to both hoops and bands with the general run from 3.00c to 3.25c and the smaller sizes, in some cases bringing 3.50c. The Standard Oil Co. recently closed on a lot of 300 tons at a price understood to have been under 2.75c, base Pittsburgh.

Plate prices have again advanced to 2.60c c.i.f. coast ports appears to be the minimum obtainable this week. Practically all mill representatives are referring inquiries to the mills before making quotations. In several instances as high as 2.85c has been named. The only award of any size noted this week went to the Union Construction Co., Oakland, and involved about 105 tons for pontoon pipe for the U. S. Engineers.

Demand for structural shapes continues unabated and is exceptionally heavy for this time of the year. Prices during the past week have firmed and 2.60c c.i.f. San Francisco is the minimum now quoted. In the IRON TRADE REVIEW of Feb. 1, it was reported that the Golden Gate Iron Works had been awarded 165 tons for the Levin Theater and 233 tons for the Studebaker garage, Berkeley. This was in error as the Levin Theoter was awarded to the Central Iron Works and the Studebaker Garage to the Jansen Iron Works. Bids on the buildings for the Sacramento High school have been rejected and plans will be revised, tonnage involved was 600 tons.

Other Finished Material

Several independent sheet mill representatives have been forced to turn down orders for galvanized sheets totaling over 1000 tons due to the inability of their mills to make shipments. It is understood that the leading interest is out of the market here until July 1. One large warehouse interest this week placed 500 tons at 4.50c base Pittsburgh being unable to obtain a lower price.

While demand for cast iron pipe from private sources remains quiet, municipal lettings are increasing and several good sized tonnages have been awarded during the past 10 days. The Central Foundry Co. secured 686 tons of 2 to 16-inch pipe for Aberdeen, Wash., 60 tons for Auburn, Wash., 100 tons for Stanwood, Wash., 700 tons of 4 to 10-inch for Lakeport, Cal. and 355 tons of 4 to 12-inch for San Bernardino.

Oil country and standard pipe continues in heavy demand and pipe mill representatives are being pressed for deliveries. Shortages in many sizes has occurred and stocks generally are badly broken. Oil field operations reported to the state oil and gas supervisor for the week ending Feb. 3 show 40 new wells started as compared with 32 the previous week. Total to date this year is 167; total same date last year 139. Deepening or redrilling jobs numbered 10 as compared with 25 the previous week. Total to date this year 79; total same date last year 68.

The leading interest has advanced bright hard wire $2 a ton making the c.i.f. price now 3.20c. Inquiries for all forms of wire products continues heavy and mill representatives are unable to take care of the needs of their customers. One independent mill representative reports the turning down of an offered order of 40 cars of baling wire and orders totaling over 100 cars of cement coated nails. The Aluminum Co. of America were awarded 530 miles of steel reinforced aluminum cable totaling 1,800,000 pounds for the Hetch Hetchy Moccasin creek power plant project and the Anaconda Copper Co. 177 miles totaling 1,000,000 pounds of copper wire.

Old Material

Cast iron scrap is not moving in any large lots although prices remain firm at from $25 to $26 a ton despite the fact that a scarcity exists. Heavy melting steel is moving better and prices appear to be around $14 a ton delivered mill as the minimum. A fair sized tonnage of stove plate recently was sold at $20 delivered.

Warehouse

Out-of-stock sales continue to increase and jobbers look for a year of big tonnage. While no changes in prices have been announced it is thought that a new schedule will shortly be issued to correspond with the advances in mill prices. All lines are reported active with nails and sheets particularly in demand.

To Discuss Safety Code

New York, Feb. 13.—A national forum is to be held at the Engineering Societies building, New York, Feb. 16 for the discussion of the new safety code to govern the use of 156,000 elevators in this country. The forum will be conducted jointly by the American Society of Safety Engineers and the engineering section of the National Safety council. This follows the formation of a sectional committee to be sponsored jointly by the American Society of Mechanical Engineers, the United States bureau of standards and the American Institute of Architects.

Will Build Tokio Subways

New York, Feb. 13.—A preliminary contract has been signed by The Foundation Co., New York, for the construction of subways in Tokio, Japan. The present contract which is on a cost-plus basis, amounts to $15,000,000 and provides for the construction of the first three subway systems to cost about $40,000,000. Negotiations for financing the first of these subways now are being carried on with New York bankers and while the outcome is not yet assured, it is believed that it will be satisfactory.

Ruhr Iron and Steel Embargoed

Shipment of All Manufactured Products Into Unoccupied Districts Ordered Stopped by France—Conditions Approaching War Time Blockade—Thirty-two Furnaces in Lorraine Banked or Out—British Prices Advance Rapidly

Iron Trade Review Staff Cable

European Headquarters,
IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, Feb. 12.—The French cabinet has decided to place an embargo on shipments of iron and steel and all other manufactured products from the Ruhr district to the unoccupied portion of Germany beginning today. If effective, this embargo will cause extensive shutdowns of German plants. Evasions are possible through shipment of material by way of Holland and Switzerland, and this may be stopped only by the application of a wartime blockade. The Berlin correspondent of IRON TRADE REVIEW, wires:

"Measures taken by France have nearly stopped the transportation of coal, coke and iron and steel products from the Ruhr. A sharp decline is noted in production of fuel, although the output of iron and steel is less affected. Difficulties in supplying coke to the unoccupied German furnaces have been largely overcome through the use of British coke imported by way of Hamburg. Iron and steel supplies for the engineering works in unoccupied Germany are sufficient for months. Heavy orders for pig iron, bars and sheets have been placed in Austria and Czecho-Slovakia. Coal in Germany is now 123,000 marks ($4.80); furnace coke 187,000 marks ($7.29); No. 3 foundry pig iron 703,000 marks ($27.48); billets 1,100,000 marks ($42.90) and bars 1,300,000 marks ($50.70)."

Sterling—$4.71

Three more stacks in the Lorraine district have been blown out and nine more banked, the total now being 16 banked and 16 out. Production difficulties are hampering French, Belgian and German export activities, giving England great opportunities.

Some indications of runaway conditions are noted in the British market, especially in regard to coke and pig iron. The demand for iron is greater than can be satisfied and the expansion of production is slow, due to the fuel shortage resulting from the heavy exports of coke. East Coast foundry iron for prompt shipment has been sold up to £5 12s 6d ($26.40). The high prices prevailing on British pig iron is checking the ability of the producers to sell to the United States. South African railways are placing heavy orders for steel with British works including rails and other supplies.

Production of pig iron in Great Britain in January amounting to 580,000 tons, with 183 stacks in blast at the close of the month. Production in December was 533,700 tons and in November, 495,000 tons. The output of steel in January was 620,000 tons compared with 546,000 in December and 585,000 in November.

Billets and sheet bars are quoted at £8 ($37.68); plates for domestic use £9 10s ($44.75) and for export £8 15s ($41.42). Scotch plates for home use are £9 ($42.39) and for export £8 7s 6d ($39.45). English beams for home use are £9 ($42.39) and for export £8 10s ($40.04). The price of black sheets has gone to £12 10s ($58.88) and galvanized to £19 ($89.49). Rails for home use are £9 ($42.39) and for export £8 10s ($40.04). Tin plate is £1 11s 6d ($5.07). East coast hematite, West Coast hematite and No. 3 Scotch foundry are quoted at £5 5s ($24.73). Middlesbrough basic iron is £5 ($23.55), and Middlesbrough No. 3 £5 10s ($25.91). Derbyshire and Staffordshire No. 3 pig iron is £4 15s ($22.38) and Northamptonshire No. 3 £4 12s 6d ($21.79). British furnace coke is now up to £1 10s ($7.07) and the foundry grade, £1 15s ($8.25).

British Market Active; Railway Demands Heavy

European Staff Special

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,

BIRMINGHAM, Eng., Feb. 1.—A reported famine in Cleveland pig iron has attracted considerable attention. With only nine furnaces in the Cleveland district making No. 3 iron to cover all home and foreign requirements, and with stocks unimportant, famine conditions have been imminent for weeks, if not for months.

Under the old system furnaces ran regularly year in and year out, accumulating stocks occasionally exceeding 1,000,000 tons. Stocks are now depleted and sudden demand creates a shortage. More consumers have come forward with orders, and as America is inquiring also, stockpiles have been swept clean.

Prices have expanded, the latest quotations representing a rise from £4 12s 6d ($21.55) to £5 ($23.30). The increase would have been greater, were it not for the disturbed conditions on the Continent which have checked demands from that quarter. The unhealthy state of affairs is shown by the reluctance of makers to light furnaces. In the Midlands for example the rise in value has not led to the relighting of a single stack. The selling prices cut profits so fine that makers are not attracted by the slight advance and the sudden interest taken in the market by late buyers.

Sterling—$4.66

The high price of coke is a constant trouble, and supplies are so scarce that owners of idle furnaces doubt their ability to command consignments sufficient to start their furnaces. Hardly any business was done in pig iron at the Birmingham market. The few smelters making iron declared themselves out of the market and disinclined to consider contracts.

Reports from the steelworks are favorable. Semifinished steel maintains its higher values. Consumers have given up expectation of supplies from the Continent and are making contracts on the basis of £7 15s ($36.11) and upward. It is difficult to buy billets under £8 ($37.28). Some firms will not take orders below £8 5s ($38.44). Yet the restarting of certain larger steelworks is not under consideration. Conditions are not considered attractive or calculated to encourage confidence.

The calling of reserves by the French military authorities has affected the railways and steelworks, and the latter are less disposed to undertake commitments in this country. No. 3 Belgian iron appears to be an exception to the general rule, coming into this country with a steady persistence which appears to defy unfavorable circumstances. It can be bought at £8 2s 6d ($37.86) and

Current Iron and Steel Prices of Europe

Converted into Dollars at Rates of Exchange, Feb. 10

British Market

Home Market Prices. Gross Tons at Works or Furnace

Corrected to Date by Cable

	$	£ s d
SEMIFINISHED STEEL		
Billets, soft steel	37.68	8 0 0
Sheet bars	37.68	8 0 0
Wire rods	48.28	10 5 0
FINISHED STEEL		
Steel bars, England, ½ to 3-inch	48.28	10 5 0
Steel bars, England, ½ to 3-inch, for export	43.57	9 5 0
Plates, ship, bridge and tank, England	44.75	9 10 0
Plates, ship, bridge and tank, England, for export	41.22	8 15 0
Plates, ship, bridge and tank, Scotland	42.39	9 0 0
Plates, ship, bridge and tank, Scotland, for export	39.45	8 7 6
Beams, England	42.39	9 0 0
Beams, England, for export	40.04	8 10 0
Beams, Scotland	41.22	8 15 0
Beams, Scotland, for export	38.86	8 5 0
Sheets, black, 24 gage	58.88	12 10 0
Sheets, galvanized, 24 gage	89.49	19 0 0
Rails, 60 lbs. and over	42.39	9 0 0
Rails, 60 lbs. and over, for export	40.04	8 10 0
Tin plate, base box, 108 lbs.	5.07	1 1 6
Steel hoops	54.17	11 10 0
Steel hoops, for export	51.81	11 0 0
PIG IRON		
Hematite, East Coast, Mixed Numbers	24.73	5 5 0
Hematite, West Coast, Mixed Numbers	24.73	5 5 0
Basic, Middlesbrough	23.55	5 0 0
No. 3 Foundry, Middlesbrough	25.91	5 10 0
No. 3 Foundry, Derby, Leicester, Nottingham	22.38	4 15 0
No. 3 Foundry, Northamptonshire	21.79	4 12 6
No. 3, Staffordshire, Foundry	22.38	4 15 0
No. 3 Scotch Foundry	24.73	5 5 0
Ferromanganese, 76 to 80 per cent	70.65	15 0 0
Ferromanganese, 76 to 80 per cent, for export	65.94	14 0 0
COKE		
Yorkshire furnace	7.07	1 10 0
Yorkshire foundry	8.25	1 15 0

Where no separate export prices are given, same quotations apply to domestic and foreign business.

German Market

Prices Last Reported

	$	Marks per metric ton
PIG IRON		
Hematite, Oberhausen	15.01	384,900
Foundry, No. 3, Oberhausen	27.42	703,000
Bessemer Stahleisen, Siegen	12.28	314,900
Foundry, No. 1, Oberhausen	14.94	383,100
Luxemburg Foundry	14.54	372,700
COKE		
Ruhr furnace	7.29	187,000
Ruhr foundry	nominal	
SEMIFINISHED STEEL		
Billets	42.90	1,100,000
Sheet bars	50.70	1,300,000
Wire rods	19.22	492,700
FINISHED STEEL		
Standard rails	22.39	574,000
Merchant bars	22.46	576,000
Structural shapes	22.27	570,900
Ship plates	25.39	649,700
Medium plates, 3 to 5 millimeters	28.49	730,500
Sheets, below 3 millimeters	35.02	898,000
Tin plate	69.62	1,785,000
Plain wire	24.00	615,500
Bands and strips	26.95	691,000

All prices are f.o.b. furnace or mill.

French Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Hematite, Lorraine	21.04	335
Basic Bessemer, Lorraine	16.64	265
Foundry, Longwy, No. 3, sand-cast	16.01	255
Foundry, Longwy, No. 3, chill-cast	16.64	265
Ferromanaganese, 76 to 80 per cent	70.34	1,120
COKE		
French furnace	6.09	97
German, furnace f. o. b. frontier	6.09	97
French foundry	8.10	129
SEMIFINISHED STEEL		
Blooms	24.18	385
Billets	27.32	435
Sheet bars	27.95	445
FINISHED STEEL		
Standard rails	34.54	550
Merchant bars	31.71	505
Angles	29.83	475
Normal beams and profiles	29.83	475
Plates, ship and tank, 10 millimeters and thicker	32.34	515
Plates, bridge and tank, 5 to 10 millimeters	33.60	535
Sheets, black, 3 millimeters	36.11	575
Sheets, blue annealed, 2 millimeters	39.56	630
Shafting, cold-drawn, 40 to 60 millimeters	39.56	630
Bars, 2 per cent nickel steel	91.06	1,450

All prices are f. o. b. furnace or works.

Belgian Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Basic bessemer, Belgian	16.37	295
Basic open-hearth, Belgian	16.37	295
Gray forge, Belgian	14.99	270
Foundry, No. 3, Belgian	16.93	305
Foundry, No. 3, Luxemburg	16.65	300
Foundry, No. 3, Lorraine	17.21	310
SEMIFINISHED STEEL		
Blooms	21.37	385
Billets	23.03	415
Sheet bars	23.87	430
Wire rods	33.58	605
FINISHED MATERIAL		
Standard rails	26.92	485
Merchant bars	25.81	465
Normal beams and profiles	24.42	440
Plates, 5 millimeters and thicker	27.75	500
Sheets, black, 3 millimeters	29.42	530
Sheets, galvanized, 1 millimeter	87.14	1,570
Plain wire	44.40	800
Galvanized wire	55.50	1,000
Wire nails	32.19	580

All prices are f.o.b. furnace or works.

as English bar iron is higher foreign No. 3 has increased its attraction to the British nut and bolt maker.

Recent advances in finished steel are well maintained. Rerolled bars have been advanced to £9 15s ($45.43) by the Birmingham mills. The rerollers have become busy, due largely to growing activity among wagonbuilders. Tubemakers also call for heavier tonnages of skelp. In such areas as Barrow, Middlesbrough and Glasgow, the shipbuilding revival is having encouraging results, the heavy mills becoming more active. A lot of railway work is being divided between Barrow and Sheffield, tires and axles especially being called for, and some large railway consignments have been made from the Tees to India. The general aspect of Sheffield is changed since the commencement of work on battleships and the entry of the home railways into the market as buyers of general material. A great proportion of new plant facilities, however, are still unemployed.

The Staffordshire iron trade is making a slow recovery. It is rather significant that while Lancashire and Yorkshire have put up the prices of finished iron 10 shillings ($2.33) per ton, Staffordshire has not followed this example and finds it difficult to obtain £11 ($51.26) which has been the standard for some time. Ordinary bars have been sold at £10 10s ($48.93). Various firms claim to supply superior brands and some of these are now quoting over £11 ($51.26). Makers of best iron in the district are becoming busier, chiefly on account of increased demands from shipbuilders and railways.

Steel scarp is sought for keenly and a number of Welsh works have none to offer. Some recent sales have been made on the basis of £4 10s ($21.07) representing a rise of fully 50 per cent over prices which prevailed last autumn. The most optimistic department of the steel trade appears to be that supplying material to the railways. Orders for thousands of wagons have been placed lately, and in addition the collieries, many of whom are doing a maximum business have come forward with large orders. The railway business is sufficient to keep leading mills at Barrow fully occupied until well beyond the Easter holidays. Structural engineering shows nothing like the activity on this side which is so evident in America. The Birmingham area in particular is decidedly quiet It is understood that shipbuilding centers are getting a share of this work. One of the developments which followed the slump in shipbuilding was the adoption by well-known shipyards of constructional engineering as a necessary sideline to shipbuilding and they appear likely to stay in the business. The firms in the Midlands are getting a decreasing share of the general home and foreign

contracts coming into the market, partly on account of high railway rates.

The sheet trade continues to expand. Midland manufacturers of galvanized sheets have again taken the lead in an advance, the Birmingham quotation having been increased 5 shillings ($1.16) up to £18 15s ($87.37). The Welsh quotation has solidified to a minimum of £18 10s ($86.21) f.o.b. March and April. The large increase during last year of 223,000 tons appears to be maintained. The colonies are returning to their prewar scale of purchase and the Continent and South America are taking heavier quantities. At a recent meeting of the Galvanized Sheet association makers reported satisfactory conditions and the regular maintenance of prices shows a different state of affairs from the keen competitive conditions which marked the industry a couple of years ago. The gradual rise in the price of semifinished steel practically compels the makers to conform to the full rate. For sheet bars and tin bars the recognized price is £8 1s ($34.50) with a rebate of 7 shillings 6 pence ($1.74) to the buyers who comply with the general conditions laid down as to selling rates.

The trade in black sheets is showing signs of recovery. The works on the Clyde and the Tees and at Barrows all report increasing activity. Glasgow, however, has a good deal of plant only partly employed.

Germans Fail To Obtain New Business

European Special Service

DUSSELDORF, Germany, Jan. 29.—Business is stagnant and a large amount of export trade is being diverted to Great Britain on account of the disturbances growing out of the occupation of the Ruhr. Production is proceeding fairly well, considering the general situation. Reasonably large export shipments of ferrous products are being made but very little new business is coming in because of uncertainties regarding prices and delivery.

Production of coal during the week ended Jan. 27 was at the rate of 65 to 70 per cent of normal and the production of pig iron about 75 per cent of normal. The output is decreasing at this time and growing difficulties are being encountered in distributing fuel and ferrous products

Mark—$0.00005

owing to the dislocation of railway communications.

German blast furnaces have declined to accept any more French minette ore from Lorraine and large contracts are being made with Swedish ore producers for heavy tonnages to be delivered throughout the remainder of this year. Details of these contracts are not yet available. It will be difficult to finance them on account of the exchange situation and the decrease in income of German iron and steel works which may result from the anticipated throttling of export trade.

Prices expressed in marks are rising rapidly and Westphalian No. 3 foundry pig iron is now quoted 382,700 marks ($18.60) with stahleisen, or high manganese steelmaking iron, suitable for the basic-bessemer process quoted at 314,900 marks ($15.70). Spiegeleisen is quoted 354,100 marks ($17.70). Billets are now 464,200 marks ($23.10) with shapes, bars and plates ranging from 576,000 to 649,700 marks per metric ton. These latter figures are equivalent to 1.30c to 1.47c per pound. The wages of unskilled workmen are now 600 marks per hour, equivalent to what is approximately three cents.

The whole of the German iron and steel industry is being thrown into a state of confusion and suspense which inevitably must result in heavy losses of business and increased manufacturing costs.

Welsh Tin Plate Market Much Stronger

European Special Service

CARDIFF, South Wales, Jan. 29.—Increasing activity in export business and a rising tendency of prices are the two salient features of the Welsh tin plate trade. India and the Far East are in the market, while buying on continental account continues good. It is rumored that a large order for oil plates is about to be placed.

As it is expected the minimum fixed price is about to be raised, merchants have begun extensive speculative buying. This has had the effect of strengthening the Welsh market. The South Wales Siemens Steel association has advanced the price of tin plate bars from £7 13s 9d to £8 1s ($35.82 to $37.51) per ton, subject to the customary rebate of 7 shillings 6 pence ($1.73) to the tinworks. As a result, the tin plate makers are expected to put up their prices correspondingly. During the last few days makers have not been disposed to sell under £1 1s ($4.89) basis I. C. f.o.b. particularly

Sterling—$4.66

as works are now well booked up.

Current prices of tin plates are as follows: Cokes, 14 x 20 inches, £1 0s 6d to £1 1s ($4.78 to $4.89); cokes, quarters, £1 1s to £1 1s 6d ($4.89 to $5.01); cokes, 10 x 20 inches, £1 9s 9d to £1 10s ($6.91 to $6.99); cokes, 20 x 28 inches, £2 1s to £2 2s ($9.55 to $9.78); ternes, 20 x 28 inches, £1 17s 9d to £1 18s 3d ($8.78 to $8.86).

India, South America and the Far East are in the market for galvanized sheets, and business is proceeding on a satisfactory basis. Prices are exceedingly firm at £18 to £18 5s ($83.88 to $85.03) per ton f.o.b. with works well booked, and raw material, in the shape of scrap, very scarce. The scrap market is firm, and prevailing prices are: Heavy melting steel scrap, £4 2s 6d to £4 10s ($19.22 to $20.97); per gross ton bundled steel scrap and shearings, £3 10s to £4 ($16.31 to $18.64); good heavy steel turnings, £3 12s 6d ($16.89) and over; mixed wrought iron and steel scrap, £3 10s to £3 17s 6d ($16.31 to $18.04) for heavy, and £2 5s ($10.47) and over for light material; heavy cast iron scrap in large pieces and furnace sizes, £3 15s ($17.46).

Official figures show that for the week ended Jan. 13, the total quantity of iron and steel goods exported from South Wales ports was 9587 tons compared with 10,412 tons the previous week. The decrease did not affect tin plates which increased from 5235 to 6847 tons. Black plates were 1631 tons compared with 2007 tons and galvanized sheets 781 tons compared with 46 tons. The exports in the previous week were inflated by an exceptional shipment of 3000 tons of steel rails from Cardiff, so that the week ended Jan. 13 produced the largest normal exportation so far this year.

Canadian Steel Prices Are Stronger

Foreign Special Service

TORONTO, Ont., Feb. 12.—Business in the pig iron market remains about as it has been during the last two weeks. A small demand for iron exists on spot account. Shipments from the furnaces, on old contracts continue active. Canadian furnaces have opened their books for second quarter, but business is light. Pig iron prices are strong. No. 1 (2.25 to 2.75 silicon) is $33.55; malleable, $33.55; No. 2, (1.75 to 2.25 silicon), $32.55, Toronto. Montreal prices are No. 1 and malleable, $35.90; No. 2, $34.90; Summerlee and Carron, imported brands, $33 to $35 per ton.

General improvement continues to be reflected in the demand for iron

and steel. The Steel Co. of Canada, Hamilton, Ont., has a good volume of orders on hand, and is about 60 days behind on bars. According to Robert Hobson, president, the company's plants are operating on a more extensive scale than for some months, and repairs are being made to open-hearth furnaces in preparation for even greater production. It is predicted that if business continues to show the same improvement in the future as during the past month or two the Hamilton plant will be operating to capacity at an early date.

Demand for practically all commodities is active and the volume of prospective business in sight is of considerable magnitude. Prices are showing an upward tendency and during the past week the Steel Co. of Canada, announced an advance on steel bars from 2.60c to 2.70c, Toronto.

Building activities continue brisk and during the past week several good orders were booked for structural shapes and bars for new buildings to be erected in Ontario. Shapes are quoted at 2.40c, Toronto. Plates continue fairly active in the market and some inquiry was received during the past week for lots ranging from 500 to 1500 tons. Plates are firm at 2.30c, Toronto. General improvement is reported in the demand for sheets. Prices of black and galvanized have become stronger, and buying for the future is again a feature of the market. No. 28 black sheets have been advanced to 4.35c, Toronto. Galvanized sheets remain firm at 5.50c, Toronto.

A slightly easier tone prevails in the scrap market. Foundries and steel plants are buying for immediate consumption, and buying on future account is light. Toronto dealers are offering $11 per gross ton, Hamilton, Ont., and report a ready market for these commodities, from steel plants. Wrought and steel axles are being picked up by dealers at $16 per gross ton, Toronto. Boiler plate is showing renewed activity, with dealers offering $9 per gross ton, Toronto. Foundries are coming into the market for machinery cast and dealers report a stronger demand for this material. They are offering $18 per net ton, Toronto. Malleable scrap and stove plate are moving more freely, dealers offering $10 and $14 per net ton, Toronto, respectively.

Scrap Stocks Depleted

(*Concluded from Page* 486)

general advance and are especially strong due to requirements of stove builders in St. Louis and heavy call from gray iron foundries. An Iowa elevator manufacturer took 300 tons of cast, and amounts from 50 to 200 tons were purchased by other interests. Belville and Quincy stove interests have been inquiring for cast with the result No. 1 railroad and agricultural cast have advanced to $23.50 to $25 per gross ton.

Railroad offerings were more liberal including 3000 tons by the Southern, 2500 tons by the Mobile & Ohio, and 5100 by the Wabash. The latter list included 1500 tons of rolling mill grades.

Melting Steel in Demand

Detroit, Feb. 13.—Scarcity of heavy melting steel and cast scrap continues and prices have undergone an advance of 50 cents to $2 a ton. The greatest demand from consumers at this time is for heavy melting steel. In some instances higher prices are being paid for liberal tonnage of good quality. Consumers are withholding buying of other lines on any large scale.

Market in South Steady

Birmingham, Ala., Feb. 12.—The scrap iron and steel market in this district is steady and quotations are tending upward. Heavy melting steel, however, has shown little change in quotations. Pipe foundries are buying scrap while other local industries, all active, are in the market for some tonnage. Dealers are finding little or no difficulty in obtaining transportation. One of the larger dealers here states it has contracts for considerable tonnage to be moved during the next 60 days.

Strength Is Shown

Buffalo, Feb. 13.—The market has strengthened and dealers believe the end of the price rise is not in sight. The market for heavy melting steel has gone to $22 in view of the heavy demand in the Pittsburgh and valley districts. Local mills are seeking heavy melting steel and dealers are holding for $23 to $23.50. The entire list is without a weak spot, and cheaper grades like No. 2 structural, sheet scrap and turnings are strong. Outside districts are paying so well that very little railroad scrap is coming in.

Prices Are Stronger

Cleveland, Feb. 13.—Continued demand affecting a greater part of the iron and steel scrap list is strengthening prices in this district as well as the Mahoning valley. Heavy melting steel, borings and turnings and bundled sheets are particularly active and while consumers are taking heavy tonnages dealers are exceptionally strong buyers in an effort to cover on contracts. Prices have been advanced on all grades, from 25 cents to $1.50 a ton. Heavy melting steel is up from $20.75 to $21 to $21.25 to $21.50 in the Cleveland district while the valley district price has advanced from $22.75 to $23 to $24 to $24.50.

Buying Small Tonnages

Cincinnati, Feb. 13.—Conditions in the local iron and steel scrap market are unusual. In the absence of large consumer buying the market is firm. This is due to the activity in other districts. There is some buying going on, but it is in small tonnages. Local consumers are manifesting little interest although inquiries are beginning to make their appearance from sources which have been out of the market for some time. Practically all grades are higher by 50 cents to $1.50. Shipments are being interfered with to a certain extent, by the unfavorable car situation and embargoes. Scrap is not being offered as freely as dealers expected and as a result stocks are not large. While the railroad lists are fairly numerous, they are not as large as ordinarily. The Louisville & Nashville list is about to close here, while bids for the Norfolk & Western list will close the latter part of this week. Railroad lists disposed of here during the past month have brought high prices.

Interest Is Reviving

Philadelphia, Feb. 13.—Interest in scrap offerings appears to have been revived by Judge Gary's optimistic expression on leaving for a trip abroad. Consumer buying is large, at least in the volume of business done, although individual tonnages taken are not large. Moderate lots of melting steel went during the past week at $20 to $21 delivered. This indicates the market. In some cases $20 has been shaved but the latter price appears exceptional.

Higher Prices Named

New York, Feb. 13.—Continued active demand in conjunction with a scarcity of material, gives a strong tone to the local iron and steel scrap market. Several grades were advanced during the week. Steel shafting now is quoted $19 to $19.50; steel car axles, $21 to $22; mixed borings and turnings $14.50 to $15; machine shop turnings, $15 to $15.50; heavy cast, $19.50 to $20; machinery cast, $21.50 to $22; stove plate, $17 to $17.50; railroad wrought, $20 to $21; wrought pipe, $15 to $15.50; grate bars, $16.50 to $17. Heavy melting steel continues unchanged but the quoted price is strong, consumers paying $22 delivered for the better grades.

J. M. & L. A. Osborn Staff Inspect Taylor Plant

Twenty-seven members of the Harmony club of the J. M. & L. A. Osborn Co., Cleveland, iron and steel jobber, recently made an inspection visit to the Cumberland, Md. plant of the N. & G. Taylor Co. A complete inspection of the company's extensive plant in South Cumberland was made, all operations in the manufacture of tin plate, from the pig iron through to the finished product being shown. Following the inspection, luncheon was held at which brief addresses were made by several members of the Taylor company organization. The club attended a basketball game and in the evening were guests at a banquet served in the City club room of the Fort Cumberland hotel.

Those to make the trip were: J. F. Reichert, president and general manager; A. W. Howe, secretary, J. W. Harrison, J. A. Decker, E. W. Thorp, J. T. Roberts, R. R. Janke, J. J. Koch, C. M. Little and P. H. Diedrich, all of the sales department; H. C. Thomas, purchasing agent, D. A. Hossler, J. G. Henninger, H. W. Brainerd, C. A. Nenno, W. H. Kuntzelman, L. B. Ticknor, H. J. Smith, F. O. Carfer, W. W. Kimble, district representatives; M. M. Gardner, M. W. Morey, F. A. Wurm, W. B. Osborn, W. B. Green and C. D. Palmer, city sales representatives; and R. A. Stebner, superintendent of the manufacturing department.

January Building Shows Growth

Construction Awards Increase 25 Per Cent Over January 1922—New Industrial Building Is Up 33 Per Cent, Reflecting Confidence in Outlook—Costs Rising—Financial Markets Strong

BY JOHN W. HILL, FINANCIAL EDITOR

WHEN it is recalled that the great building revival of 1922 was one of the most important factors in the general recovery of trade, the January record of construction assumes a peculiar significance. During that month, as reported by the F. W. Dodge Co. and pictured in the Business Trend, the volume of new building awards in square feet increased 25 per cent over January 1922.

A valuable index to the prospects for business and the confidence in the outlook on the part of manufacturers is found in the 33 per cent increase in industrial building over one year before. The increase in industrial building in 1922 over the preceding year was 85 per cent. This was the largest relative gain of all the important groups of building. Business activity probably will cause continued large gains in industrial construction this year.

In January residential building was large. It amounted to 61 per cent of all construction and gained 30 per cent over January. During 1922 housing projects absorbed 51 per cent of the new building. The January record reflects the still existent shortage of housing in the country.

The January record of new construction plans foreshadows a season of further great activity. It is estimated that plans for new building this year call for $5,000,000,000. In addition there is $1,250,000,000 of work left over from 1922.

How long will the building boom last? Building material costs are rising. They are now nearly 20 per cent above one year ago. Labor is also scarce and high. Eventually these factors will affect the building industry. For the present, however, there is no indication of a lull.

Financial markets have become more aggressively confident. European uncertainties, for the time, have been submerged under the overwhelming indications of vigorous domestic business revival. Settlement of the British debt has been a constructive and stabilizing influence upon international finance. Pound sterling has advanced as shown in the Business Trend.

The provision of the debt terms permitting Great Britain to tender American war bonds at par instead of cash to meet the annual payments of more than $150,000,000 has stimulated Liberty bond prices. Large industrial companies and banks with reserves in the form of Liberty bonds are assured by this provision against depreciation of their reserves for many years to come. Great Britain will buy these issues on every dip below par. This will tend to keep them near par value.

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The Barometer of Business

WEEKLY COMPARISON

	Last week	Week before	One month ago	One year ago	1913
Business failures	371	437	540	581	450
Cash ratio Fed. Res. system	77.0	76.9	73.6	76.1	.....
Loan rate, 4-6 months, N.Y. (per cent)	4½-4¾	4½-4¾	4½-4¾	4¾-5	4½-5¾
Aver. 20 Ind'l shares	$96.06	$93.81	$94.04	$79.46	$81.50
Aver. 20 rail shares	$88.99	$86.36	$84.74	$76.57	$112.00
Av. 40 bonds	$79.27	$78.85	$79.06	$76.96	$93.00
Car loadings (week ended Jan. 27)	871,164	865,578	711,200	740,386	*803,282
Bank debits 165 cities (000 omit'd)	$9,908,117	$9,205,213	$10,273,000	$8,096,912	.....

*1920.

FOREIGN EXCHANGE (Demand)

	Normal	(close) Feb. 10	Week before	Month ago	Yr. ago
Sterling	$4.86	$4.68	$4.68	$4.67	$4.33
Francs	19.3c	6.20c	6.49c	6.92c	8.54c
Lira	19.3c	4.82c	4.95c	4.94c	4.83c
Marks	23.8c	0.0035c	0.0027c	0.009c	0.50c

MONTHLY COMPARISION

	January	Month before	Year ago	Monthly average 1913
Dodge building awards in 27 states	$217,365,000	$215,213,000	$165,900,000	$71,450,000
Business failures:				
Number	2126	1814	2723	1336
Liabilities	$49,210,497	$58,069,021	$73,795,780	$22,723,000
Exports	$344,000,000	$380,056,000	$296,198,000	$207,000,000
Excess of gold imports	$23,730,000	$3,274,561	$29,504,245	†$630,716
Bureau of Labor Price Index	156	156	140	100
Bradstreet's Price Index	148.3	148.2	123	100
Economist's British Price Index	4324	4264	4284	2717
Cost of Living Index	‡158.9	158.4	162.7	100.0
New incorporations	$909,693,800	$813,901,000	$843,000,000	$172,301,000
Railroad net earnings	†$78,860,000	$85,000,000	$63,884,000	$59,900,000

†November. ‡December. *Monthly average export excess.

The Business Trend

February 15, 1923

TRADE TODAY, TOLD BY IRON TRADE REVIEW CHARTS

GENERAL SITUATION—Business recovery developing rapidly into period of complete prosperity; in iron and steel and some other lines the only limiting factor in buying is inability of producers to make early deliveries; forward buying more pronounced as confidence in price level and outlook grows.

INDUSTRIAL ACTIVITIES—Heavy pig iron output indicates unprecedented industrial production for this time of year; more iron made in January than any other January on record save 1919.

TRAFFIC—Freight movements continue to establish new high records; car loadings for week of Jan. 27 were 21 per cent ahead of same week of 1922 and 8 per cent over 1920.

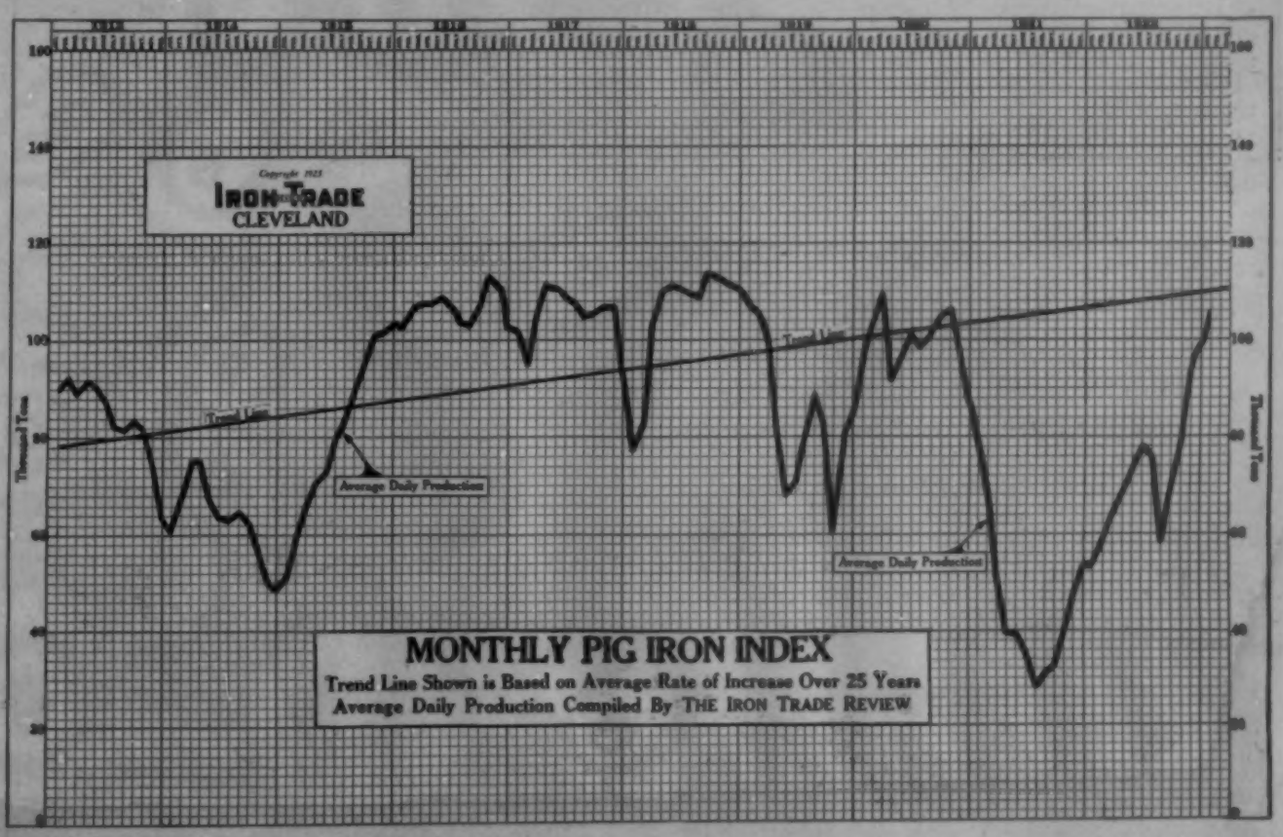
BUILDING CONSTRUCTION — January building activities foreshadow another big year; total square feet awards 25 per cent over January 1922; residential building gains 30 per cent; industrial 33 per cent.

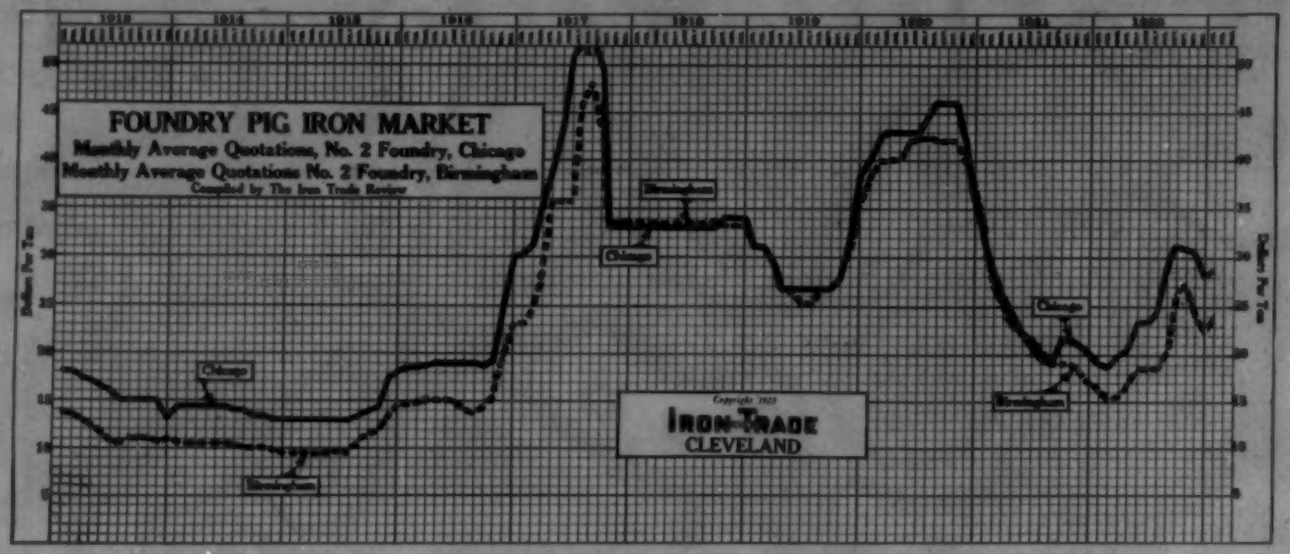
FOREIGN EXCHANGE—Sterling advanced by favorable house vote on terms of British debt settlement.

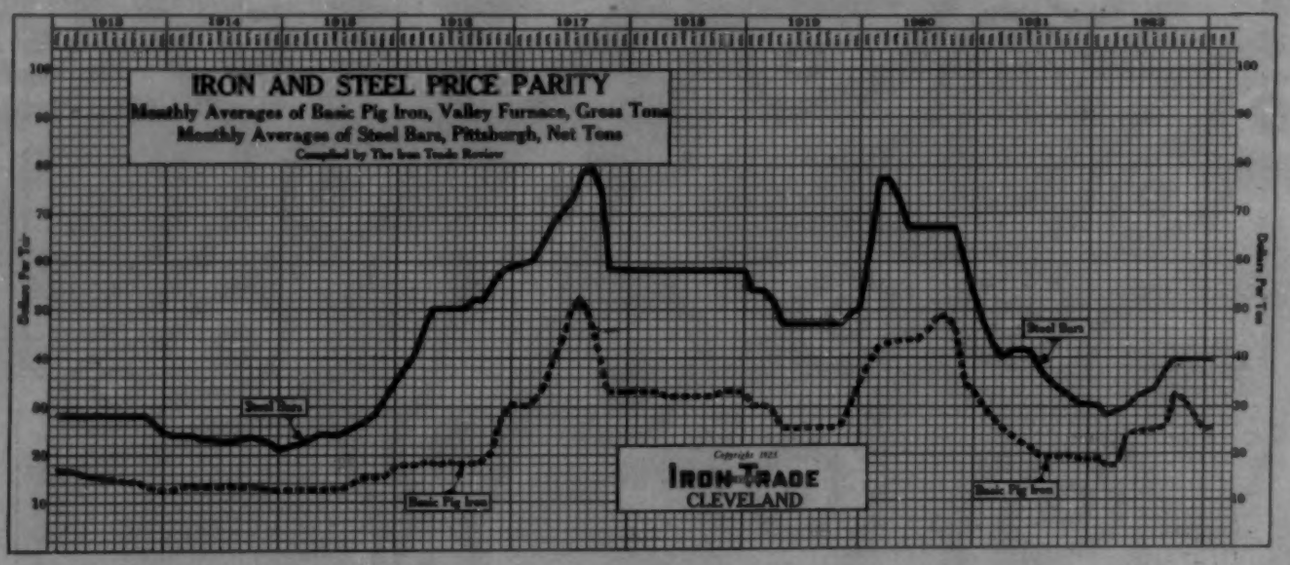
CAR AWARDS—January car awards of 13,000 less than December but greatest number for any January since 1917.

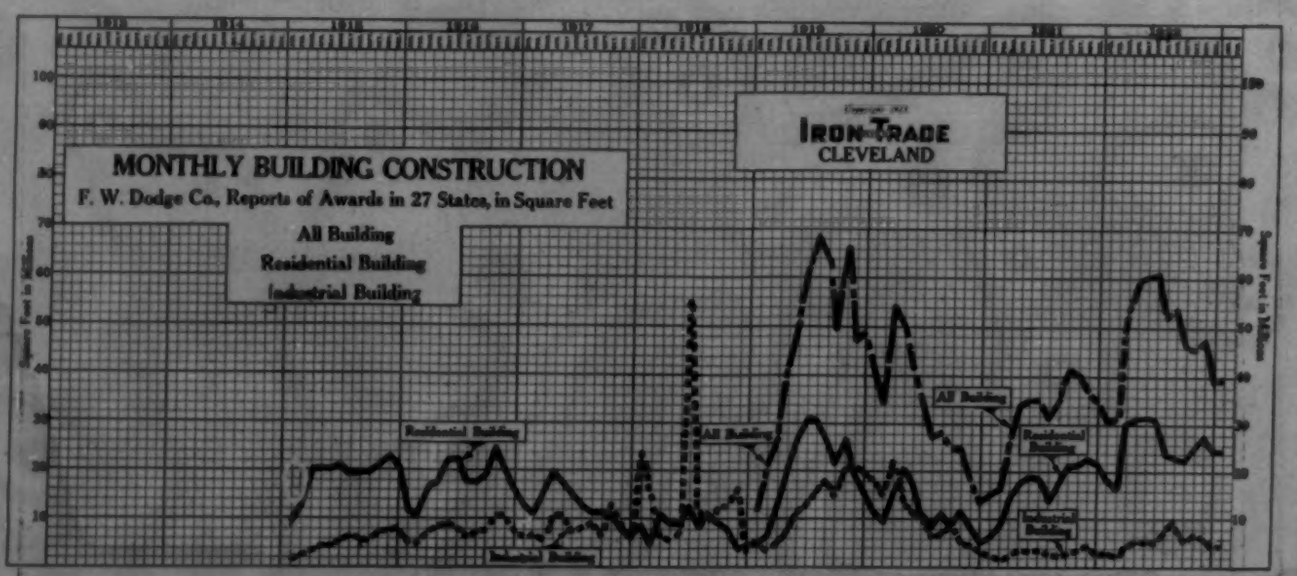
COAL PRODUCTION—Bituminous output gain continues; prices easier with passing of strike threat.

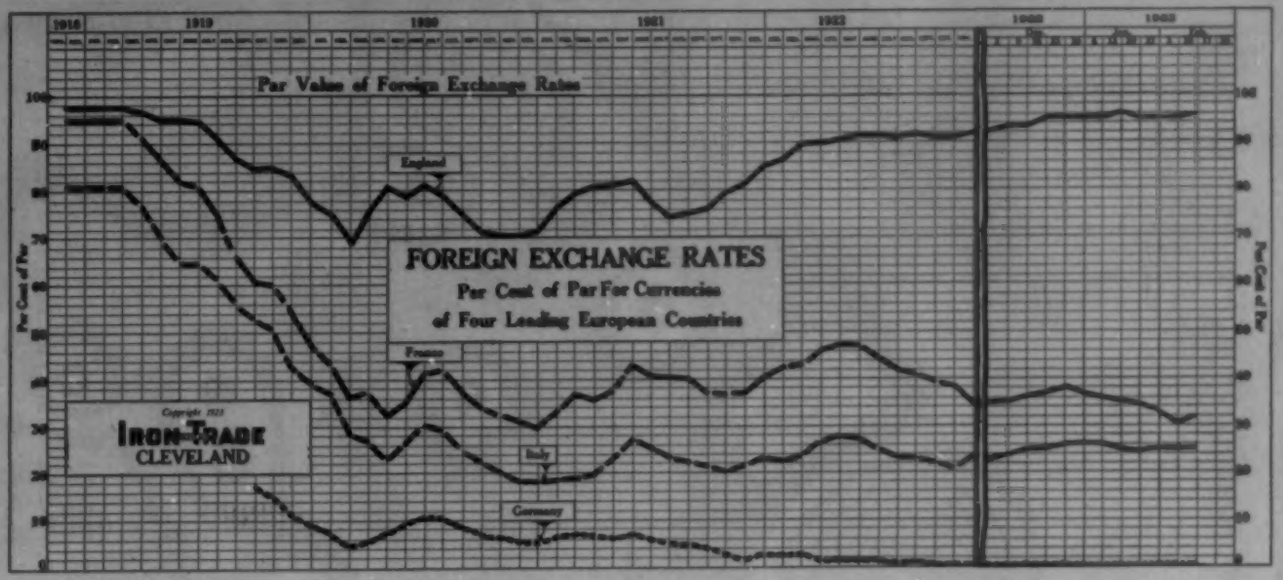
SECURITIES—Fifty representative shares make new high record since 1920; excellent trade outlook dominates sentiment; European uncertainties ignored by financial markets.

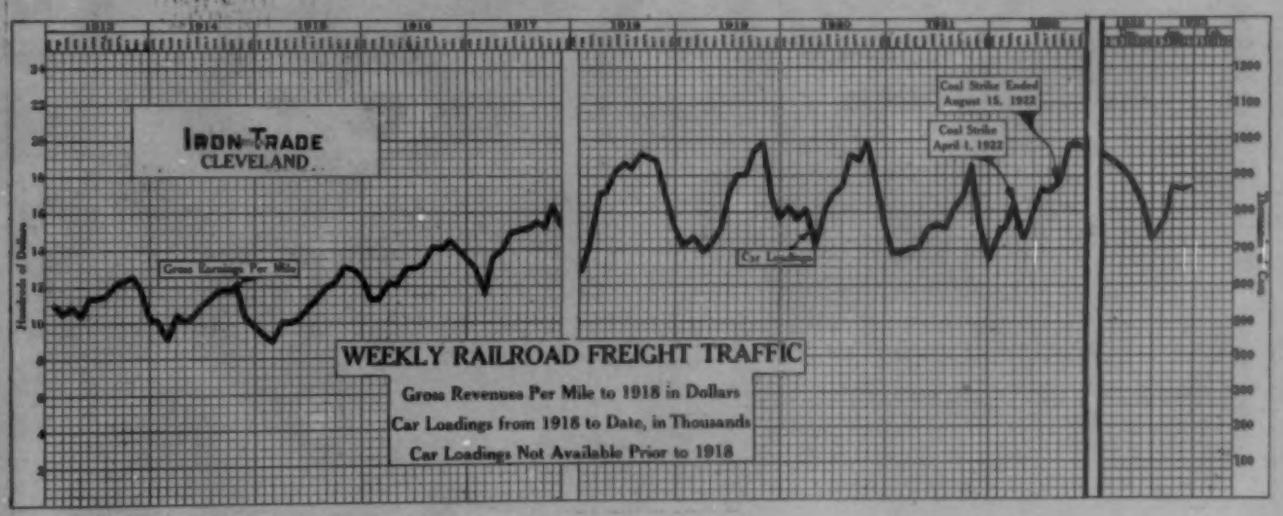


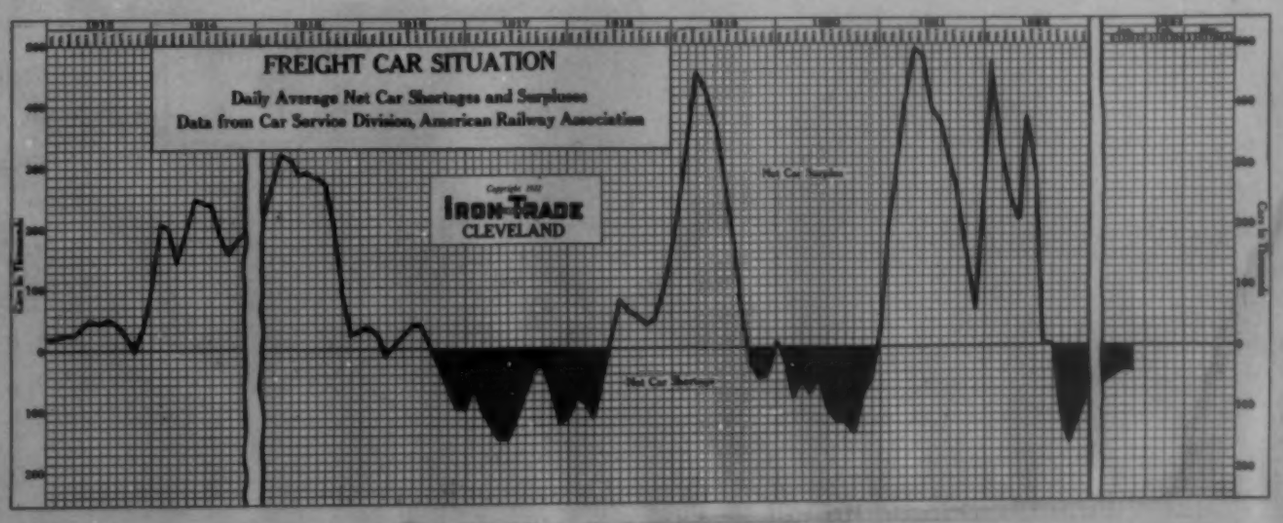

FOUNDRY PIG IRON MARKET
Monthly Average Quotations, No. 2 Foundry, Chicago
Monthly Average Quotations No. 2 Foundry, Birmingham
Compiled by The Iron Trade Review
Chicago
Birmingham
IRON TRADE
CLEVELAND

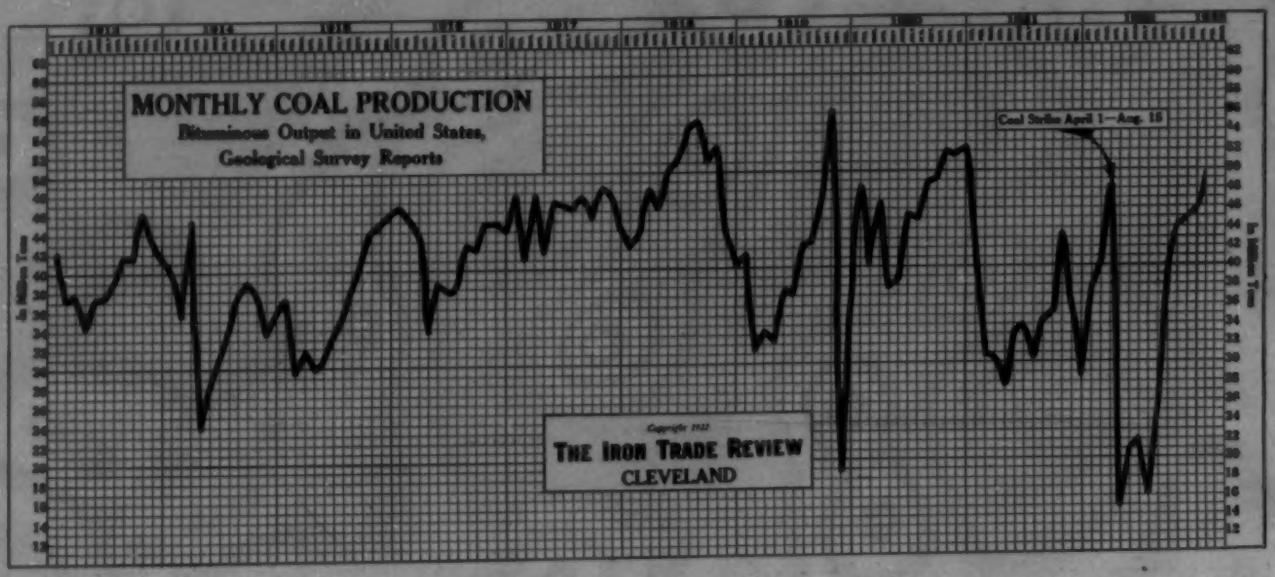

IRON AND STEEL PRICE PARITY
Monthly Averages of Basic Pig Iron, Valley Furnace, Gross Tons
Monthly Averages of Steel Bars, Pittsburgh, Net Tons
Compiled by The Iron Trade Review
Steel Bars
Basic Pig Iron
IRON TRADE
CLEVELAND

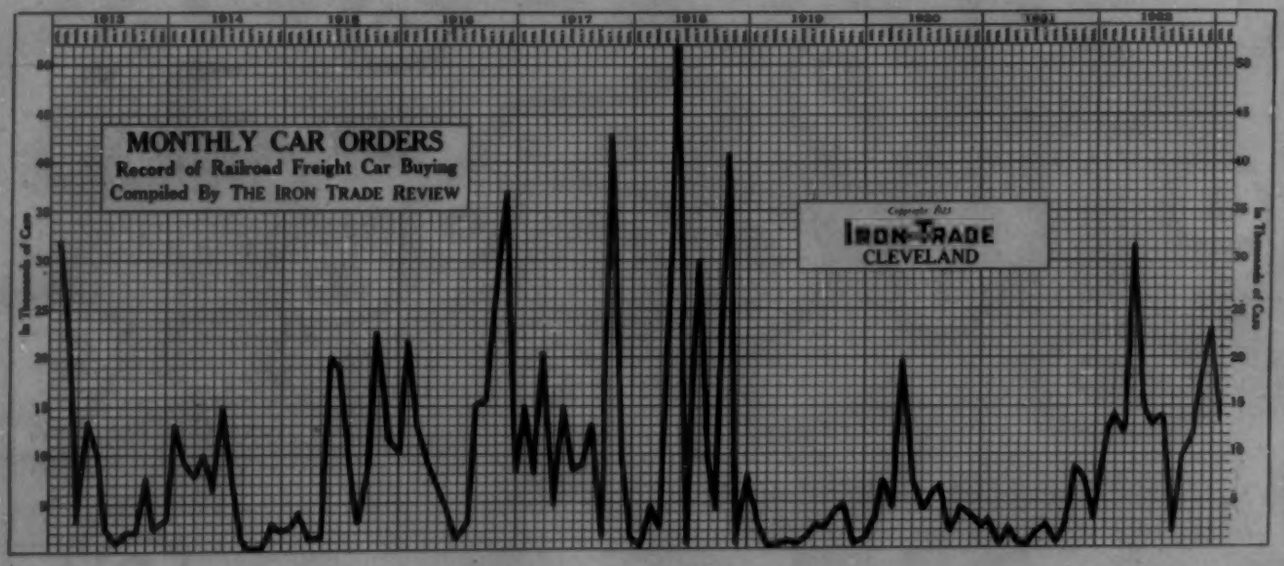

MONTHLY BUILDING CONSTRUCTION
F. W. Dodge Co., Reports of Awards in 27 States, in Square Feet
All Building
Residential Building
Industrial Building
IRON TRADE
CLEVELAND

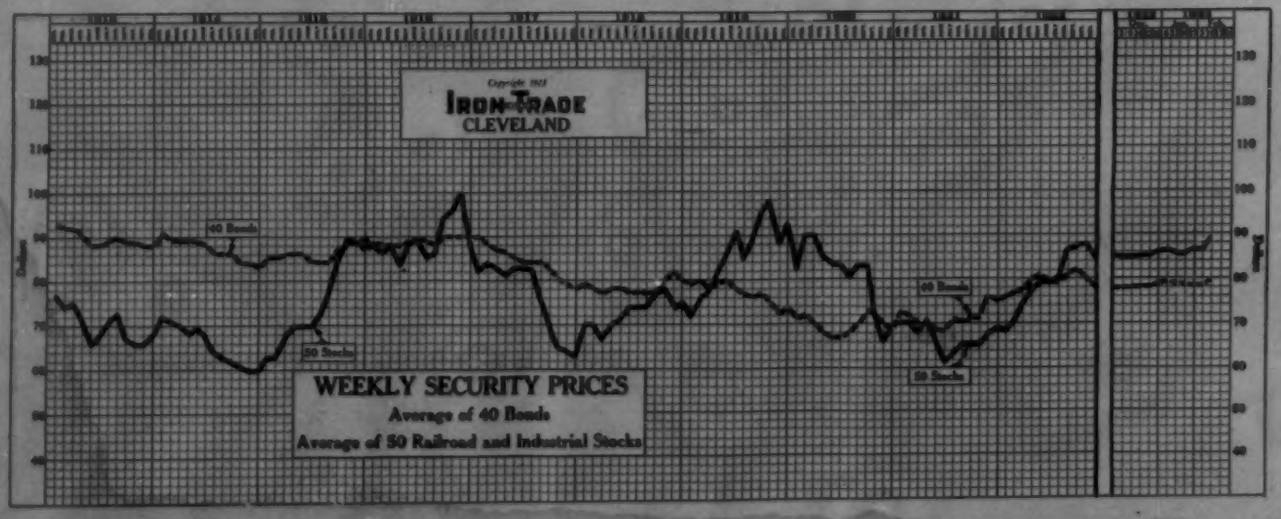

Par Value of Foreign Exchange Rates
England
FOREIGN EXCHANGE RATES
Per Cent of Par For Currencies
of Four Leading European Countries
France
Italy
Germany
IRON TRADE
CLEVELAND


IRON TRADE
CLEVELAND
Gross Earnings Per Mile
Car Loadings
Coal Strike Ended
August 15, 1922
Coal Strike
April 1, 1922
WEEKLY RAILROAD FREIGHT TRAFFIC
Gross Revenues Per Mile to 1918 in Dollars
Car Loadings from 1918 to Date, in Thousands
Car Loadings Not Available Prior to 1918


FREIGHT CAR SITUATION
Daily Average Net Car Shortages and Surpluses
Data from Car Service Division, American Railway Association
IRON TRADE
CLEVELAND
Net Car Surplus
Net Car Shortage


MONTHLY COAL PRODUCTION
Bituminous Output in United States,
Geological Survey Reports
Coal Strike April 1—Aug. 15
THE IRON TRADE REVIEW
CLEVELAND


MONTHLY CAR ORDERS
Record of Railroad Freight Car Buying
Compiled By THE IRON TRADE REVIEW
IRON TRADE
CLEVELAND


IRON TRADE
CLEVELAND
40 Bonds
50 Stocks
WEEKLY SECURITY PRICES
Average of 40 Bonds
Average of 50 Railroad and Industrial Stocks

Making Handles from Strip Steel

Machine Tool Handles Formerly Made from Castings Now Produced on Forming Presses Utilizing Special Dies—Twelve Operations Required To Turn Raw Material Into Finished Product—Details of the Process

BY HERBERT R. SIMONDS

DURING recent years the pressed metal industry has made deep inroads into certain phases of the foundry trade. Extension into new foundry fields has overcome the loss thus occasioned, but it is interesting to note how ingenuity has made possible the manufacture of many complicated forms out of a flat sheet of steel.

One of the most ingenious products from sheet metal is the familar steel handle which is found on practically all machine tools. This handle formerly was a casting. Now a sheet of thin strip steel is fed continuously under a double acting press while cups which soon are to become handles drop in rapid succession into a container beneath the machine. These cups which are formed in the first

The author is associate editor of Boston of Iron Trade Review.

operation, pass through eleven other press operations before having acquired the final form of a machine tool handle. After leaving the last press the handle goes to a polishing department where abrasive wheels of different grades accomplish the task of putting on the final smooth finish. To those in a plant which is daily turning out large quantities of these handles the operation seems simple enough, yet to one who is but vaguely familiar with the pressed metal industry the forming from a flat disk of steel of a deep cup, which is much narrower at the open end than at the closed end, seems almost an impossible performance. Under the action of a powerful press, steel seems almost like butter, and when certain essential conditions are adhered to, the forms which can be developed are scarcely limited except by the cost of punch and die equipment and the time of operators.

In Fig. 2 is shown the operation of punching disks from heavy strip steel. Fig. 1 shows in detail the sequence of operations from the flat disk 5 3/16 inches in diameter to the complete handle which is nearly 5 inches long. The sections shown in the top row show the usual deep drawing operation. Annealing is advisable after the second operation. The term "drawing" is perhaps incorrectly applied to these

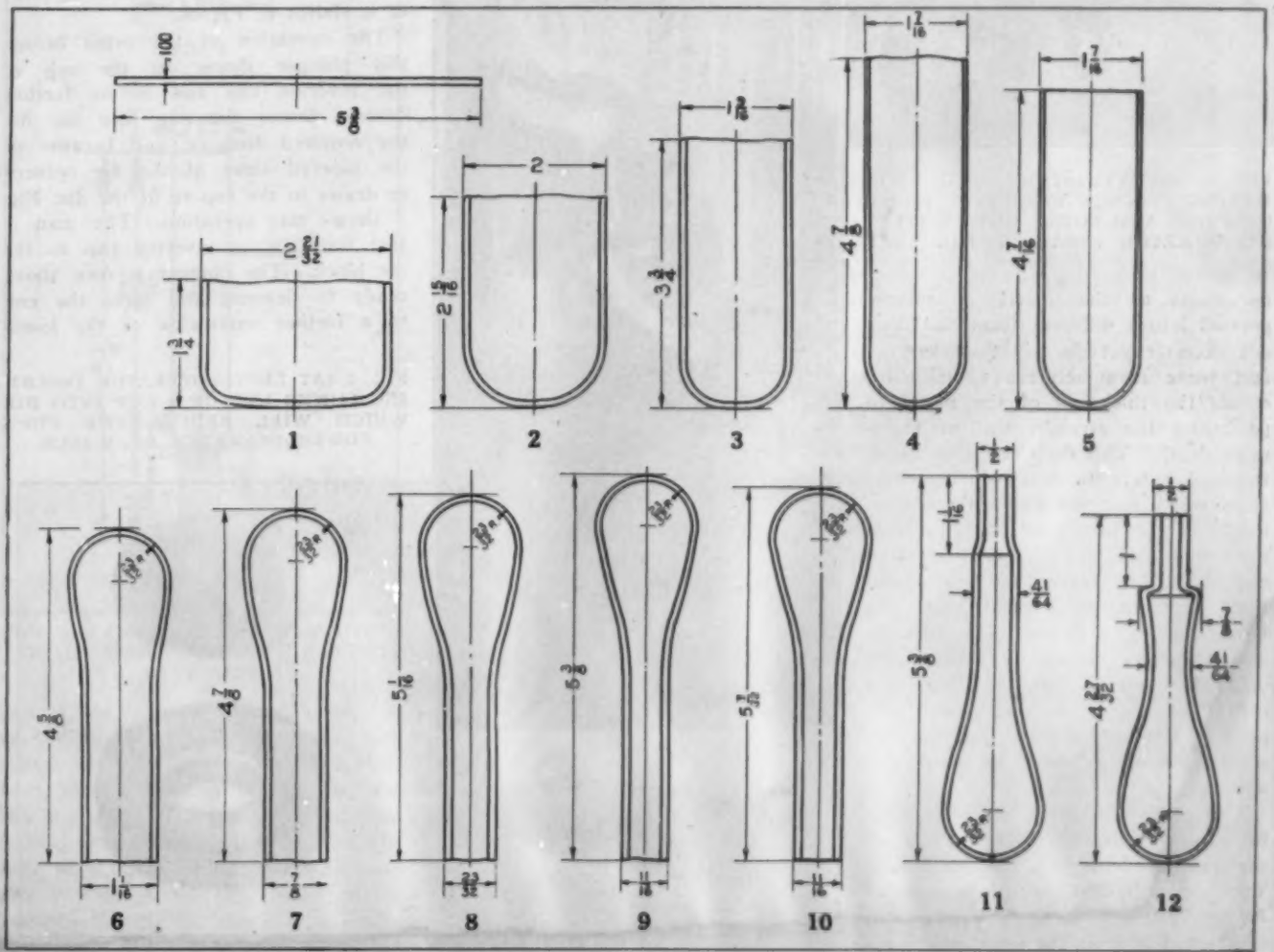


FIG. 1—CROSS SECTIONAL SKETCHES SHOWING THE SEQUENCE OF OPERATIONS IN PRODUCING A HOLLOW MACHINE TOOL HANDLE FROM A FLAT STEEL DISK

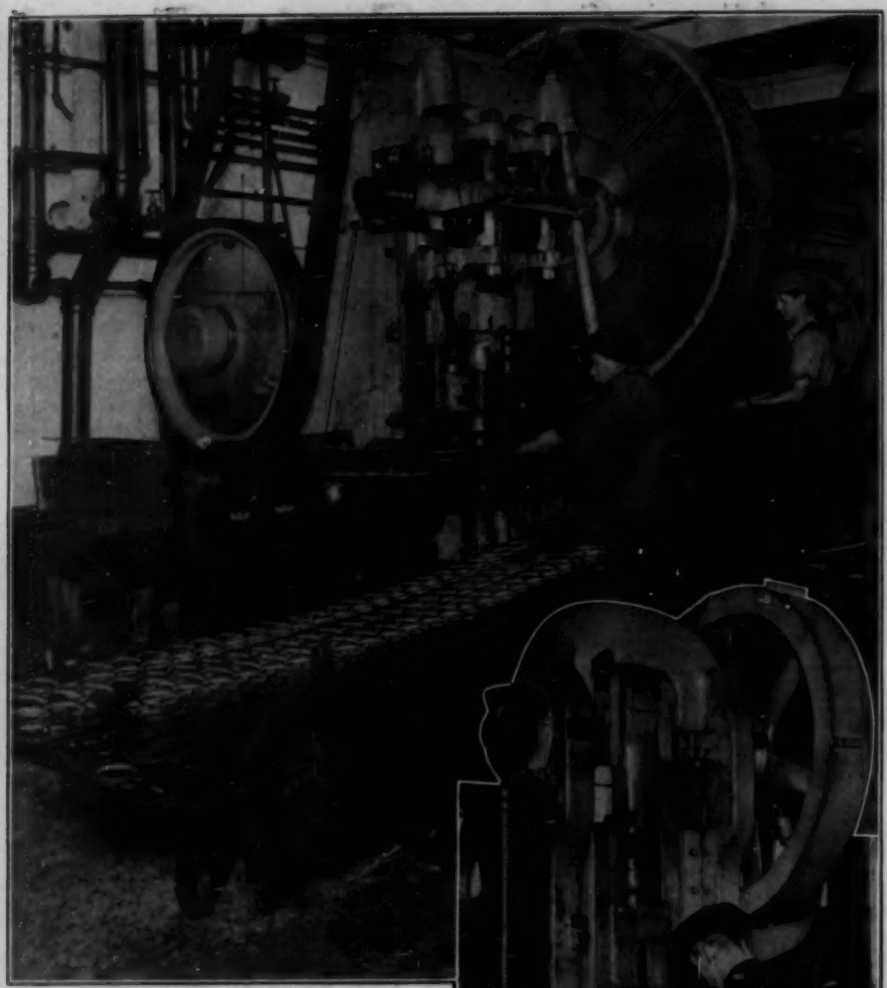


FIG. 2 (ABOVE)—STRIP STEEL FOR MAKING DISKS IS FED IN AT RIGHT OF PRESS AND COMES OUT IN FORM OF SKELETON SCRAP AT THE LEFT

operations as the metal is merely pressed into a different form and does not necessarily reduce in thickness. In fact some manufacturers actually increase the thickness of the metal in producing the straight cup of maximum depth. This deep cup after being trimmed, enters the first reducing operation which narrows down about two-thirds of the length of the cup from the open end to a 1/8-inch smaller diameter. The succeeding four operations are almost identical with this first reducing operation. The bowl or closed end of the cup is kept to the original diameter, but the first four operations shown in the second line of Fig. 1 each reduce the diameter a small amount as shown by the dimensions.

The tenth operation completes the form of the closed end and trims off the open end to the desired length. The eleventh and twelfth operations are interesting because here a section of about 1 inch at the open end is reduced without reducing the diameter at any point of the rest of the handle. This is done in a press operating on the end which is reduced and no material whatever is used in the balance of the handle to keep it to its full diameter. Operation 12 strangely enough expands the diameter of the part of the handle close to the neck without the internal application of any pressure. Generally speaking, these reducing operations require frequent annealing, and it is customary in some plants to anneal after each operation, although in others annealing apparently is not required except after each two, and some times three, operations.

Theoretically the operations which reduce the open end of a cup are identical with those which form a deep cup from a shallow one. The chief difference in practice is that no punch tool, in the strict use of the term, is used. A deep cup which is to be reduced is placed bottom end up in a die of the form shown in cross section of Fig. 6. The conical portion of this die is large enough at the open end to just receive the lower end of the cup. What corresponds to the punch tool is in reality a plunger formed to exactly fit over the top of the cup which is to be reduced. Such a plunger is shown in Fig. 5.

The operation of the press brings this plunger down on the top of the inverted cup and in its further descent forces the cup into the die the required distance, and because of the tapered sides of the die reduces or draws in the cup to fit the die. Fig. 3 shows this operation. The man is just inserting an inverted cup in the die block. The plunger is seen above ready to descend and force the cup to a further narrowing of the lower

FIG. 3 (AT LEFT)—OPERATOR INSERTING LOWER END OF A CUP INTO DIE WHICH WILL REDUCE THE CUP'S LOWER DIAMETER BY 1/4-INCH

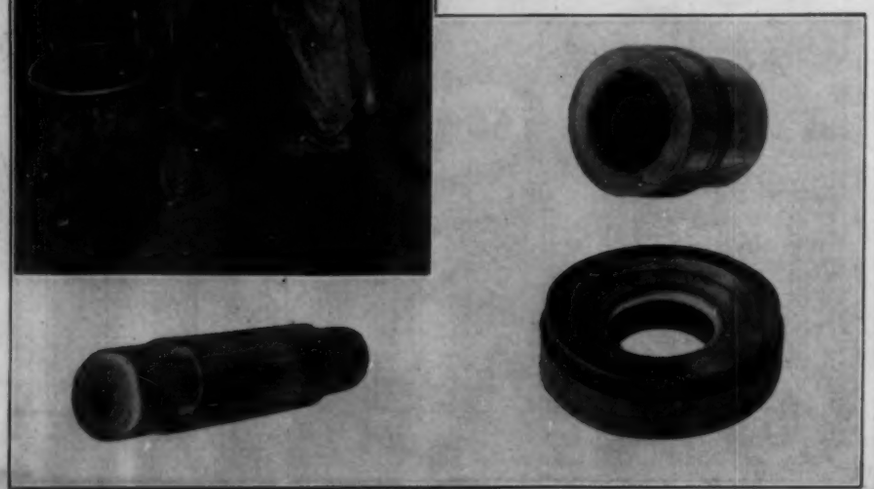
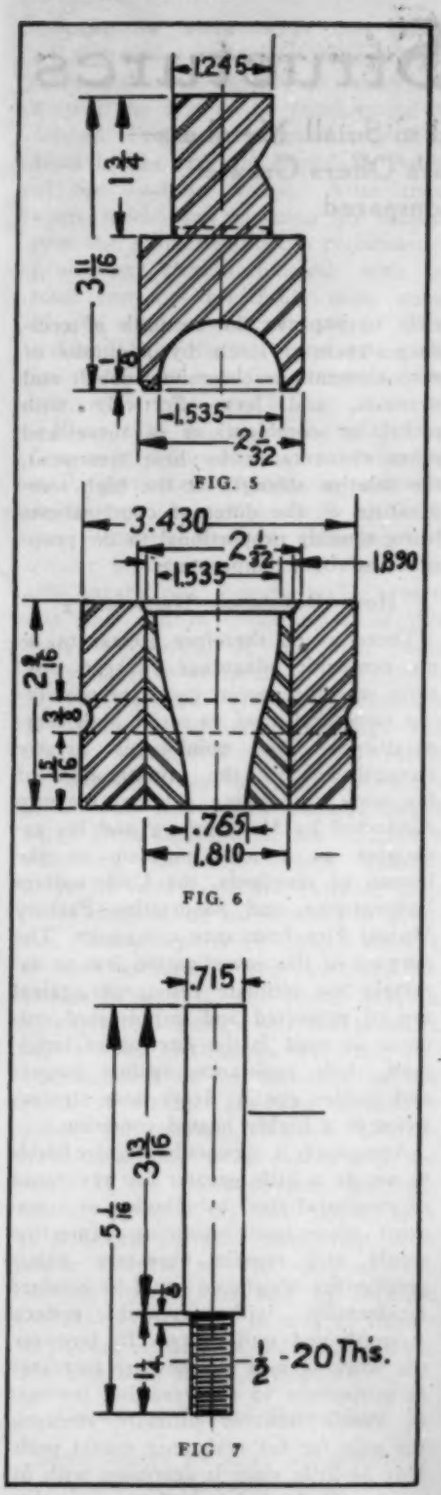


FIG. 4—TOOLS USED IN DOUBLE ACTION PROCESS WHICH CUTS DISKS AND FORMS CUPS FROM FLAT STRIP STEEL



FIGS. 5, 6 AND 7—CROSS SECTION OF A SET OF TOOLS USED IN REDUCING DEEP CUTS

end. This reducing operation may be carried to almost any limit. In fact, completely closed hollow spheres have been formed in this manner without the use of any liquid or other supporting material on the inside. The first thought of one not familar with this process is that the walls of the cup would buckle inward while being forced into the tapered die. This has sometimes happened but the process, while it is now developed to such an extent that handles of the style here shown are turned out in large numbers by seemingly simple punch operations, must not be considered quite as simple as the rapid press operations would indicate.

Flow of Metals Studied

It has been necessary to study carefully the theory of the flow of metal under different applications of pressure. The design of the reducing die is an all-important feature and accuracy in alignment and in the undercurve of the plunger is necessary to successful production. In Fig. 7 the piece is used to lift the cup out of the die after it has been forced down by the plunger die. It is fastened to a frame work which in turn is fastened to the movable part of the press, and, therefore, being raised with the upward stroke, enters the lower end of the die and knocks the cup upward out of the die where it is swept off into a container.

Fig. 4 shows the tools used in the first operation which cuts disks from strip steel and forms the initial cups. The piece in the right foreground is the die. The remaining two pieces slip one over the other and form a double punch, each with independent movement. The hollow cylindrical piece in the background descends first and between its outer lower edge and the inner upper edge of the die, cuts out a circular disk, and descending further holds this disk against the shoulder in the die. The inner punch descends and forces the disk over the smoothly rounded edge of the inner opening in the die, and in this way squeezes the metal into the cup form.

Having solved the problem of pressing steel from a flat form into the form required for a machine tool handle the next question is the handling of material and organization of work so as to cut expense to a minimum. At the plant of the Rockwood Sprinkler Co., where the accompanying photographs were taken, this feature has been given special attention. Most of the presses are arranged high enough above the floor so that steel containers may be pushed underneath to catch pieces as they drop through the die. Some pieces, of course, do not drop through the die, but are pushed up from below as just described. It is then necessary to have the steel container stationed as close to the front of the press as possible without being in the operator's way and to brush the completed pieces off of the face of the die by hand into this container. Tilting presses sometimes are used to facilitate the removal of the completed work into containers.

Inasmuch as annealing is necessary throughout the course of the different press operations, these containers must be moved back and forth a great deal from the press to the annealing de-

(*Concluded on Page* 510)

FIG. 8—HANDLES IN PROCESS ARE PLACED IN CONTAINERS AND MOVED ABOUT THE SHOP BY MEANS OF THIS HANDY CARRIER

Choosing Steels for Structures

Use of Heat Treated Steels for Engineering Work Limited to Small Members—Salvaging of Old Rails by Rolling Into Reinforcing Bars Offers Greater Possibilities—Riveted and Welded Joints Compared

BY GEORGE K. BURGESS

EVIDENTLY there are possible uses of heat treated steels in engineering structures, and such steels have been introduced to a limited extent as in lattices and auxiliary parts. The difficulties of furnishing a reliable and uniform product mount rapidly with the size of heat treated pieces, as do the difficulties and costs of joining by rivets or otherwise. The line of least resistance would seem to be for certain structural purposes, as parts of bridges, to develop first higher carbon steels which may be air quenched by some method such as the Sandberg process. After a study has been made of the most economical alloying element of combination to give maximum yield point without serious loss of ductility in steel to be air treated, it may be possible to consider going over to liquid quenched and tempered steels, although at first at least these should be limited to small parts.

Mr. Modjeskie again is a pioneer for he also appears to the first to use heat-treated eye-bars for bridges, again for the Memphis bridge, using Mayari steel for which the rather mild treatment consisted in an anneal at about 1500 degrees Fahr. followed by an air quench.

It is questionable if it will be found economical or safe to push the use of severely heat treated alloy steels for the main members of engineering structures, and at present there are few manufacturing concerns equipped, or with adequate experience, to handle such production. In parts of structures subject to fire hazard, the use of heat treated steels would be an additional hazard as they lose their enhanced properties with rise of temperature.

Must Know Steel Behavior

In certain types of engineering structures subject to fire hazard, such as buildings, it is of prime importance to know accurately the behavior of steel at high temperatures and it is also of interest to determine if it is possible to develop a structural steel which maintains its strength at high temperatures, as well as what are the safe temperature limits, and also what is the most effective method of protecting steel columns against the intense heat of fire.

The determination of the mechanical properties of various steels with changes in temperatures up to 1200 degrees Fahr. is being carried out at the bureau of standards by Mr. French and there has been published the results on the "Effect of Temperature, Deformation and Rate of Loading on the Tensile Properties of Low-Carbon Steel," "Tensile Properties of Some Structural Alloy Steels at High Temperatures."

It may be stated in brief that a low carbon steel has its maximum strength between 480 and 570 degrees Fahr. and minimum ductility throughout a somewhat wider range. Above 570 degrees Fahr. the strength falls off rapidly accompanied by rise in ductility while the elastic limit commences to decline at a somewhat lower temperature than the strength. At 760 degrees Fahr. the tensile strength becomes about two-thirds of its value at normal temperature, and the elastic limit one-half to two-thirds this value. The material moderately cold-worked by rolling maintains the imparted properties of increased elastic limit and slightly diminished ductility until a temperature of 870 degrees Fahr. is reached.

Tests made at various elevated temperatures on a number of carbon and alloy steels indicate that above about 1020 degrees Fahr. the strength of all steels is low and drops rapidly with increase in temperature. In the higher temperature ranges the metal is plastic and will continue to deform as long as the load is maintained and will finally give way.

It is improbable that any steels can be produced to continuously or for reasonably short intervals stand appreciable loads at temperature above about 1200 degrees Fahr. except in cases where large proportions of alloying elements are added to reduce the iron content to such low values that the resulting product cannot correctly be called steel.

However, at temperatures around 760 degrees Fahr. and below it is possible to improve the strength of ordinary structural steels by additions of such elements as chromium, cobalt and uranium, and less effectively with nickel, or combinations of these and other elements or by heat treatment, the relative strength at the high temperature of the different combinations being roughly proportional to the properties at room temperature.

Heat Resistance Unnecessary

There would therefore appear to be no economic advantage, except possibly in some special cases, of modifying structural steel to resist high temperatures. This opinion is greatly strengthened by the investigation of fire tests of building columns recently conducted by Mr. Ingberg and his associates as a joint problem of the bureau of standards, the Underwriters Laboratories, and Association Factory Mutual Fire Insurance companies. The purpose of this investigation was to ascertain the ultimate resistance against fire of protected and unprotected columns as used in the interior of buildings, their resistance against impact and sudden cooling from hose streams when in a highly heated condition.

Apparently it appears hardly profitable to secure a little greater fire resistance of structural steel by alloying or treatment since heat insulating protection would still remain necessary unless greater fire resistance could be attained incidentally with greater general strength and uniformity. If, however, the working unit stresses are increased in proportion to the resulting increase in elastic limit or ultimate strength, the gain for fire resistance would probably be little since it decreases with increase of load imposed.

A knowledge of the change in length with rise in temperature is of considerable importance in the design of certain structures. The bureau is equipped for determining the thermal expansion at high and low temperatures, and the expansion coefficients have been measured for a number of steels. Results showed that except for unusual compositions, the expansion coefficients of most steels do not differ greatly.

The question of the protection of structural steel by paint has received

This is second and last part of a paper presented at the New York meeting of the American Society of Civil Engineers, Jan. 17-19. The first part appeared on page 443 of the Feb. 8 issue of IRON TRADE REVIEW. The author is chief, division of metallurgy, bureau of standards, Washington, and president, American Society for Testing Materials.

considerable attenton at the bureau of standards, and specifications have been published, some of which are among the first to be promulgated as United States government specifications by the recently organized Federal Specifications board. After thorough mechanical cleaning to remove rust and scale, the bureau recommends protecting structural steel with at least two and preferably three coats of red lead-linseed oil paint. This red lead paint should be mixed on the job and used within 24 hours after mixing.

From time to time there have been reports of serious damage to structural steel, particularly reinforcing material in concrete, in the footings of buildings, bridges, elevated railways, and similar structures. A few years ago this hazard was thought to be a serious one and in consequence of this fear, the bureau of standards made an exhaustive research of electrolysis in concrete and electrolytic damage to bridges, steel frame buildings and similar structures. The net result of this investigation was that while in extreme cases some damage might occur from this source, the conditions necessary for any serious damage to result were far more extreme than those likely to be encountered in practice. Many reports of alleged damage to such structures were carefully investigated and it was found that in all cases the damage was due to other causes than electrolysis with the single exception of the corrosion of the bases of elevated railway structures where for obvious reasons electrolysis conditions were particularly severe. If the most obvious and elementary precautions are taken, such as avoiding metallic connection with power circuits in the case of the building foundations and of metallic connection with rails in case of elevated railway structures, no trouble from this source is to be anticipated.

Causes of Failure Determined

Some bridge material, submitted by the board of railroad commissioners of the state of Iowa, was of wrought iron from a diagonal member of a single system Warren truss-type bridge of 85-foot span, which failed under the load of a Pacific type locomotive and tank car. A study of the failed parts showed inferior material laminated to an excessive degree with evidences of long continued overstressings of the material. A roof-truss from the Knickerbocker theater disaster at Washington, and one of which certain of the interested parties had claimed to be of defective material, was submitted by the building inspector of the Distrct of Columbia. The tests at the bureau showed this material to come well within the specifications for this class of structural steel and to be free from structural features and inclusions which would lead one to regard the steel as defective. Thus, this material apparently failed from an external cause, such as a blow during the collapse of the structure.

A question to which considerable attention has been given recently by specification making bodies such as the American Society for Testing Materials and the testing laboratory of the bureau of standards is the determination of the characteristics of concrete reinforcement made from salvaged steel such as rerolled rails. This investigation is of great practical importance in view of the large available quantity of such material and in view of the fact that its use is quite generally prohibited at present, on account of alleged brittleness causing breakage in handling and the uncertainty of its behavior in structures.

Examines Bars from Old Rails

The bureau has made tests on bars purchased from a number of warehouse stocks. From the tests made it appears that either rerolled or new billet steel with yield points up to 60,000 pounds per square inch which meet the tension and bend tests would be satisfactory for concrete reinforcement. It seems doubtful if steel having a yield point greater than 60,000 pounds per square inch can be bent to meet conditions in practice, but reinforcement not required to be bent should be satisfactory if it meets the tension test and suitable impact or bending tests to detect brittleness. The brittleness appears to be associated more with the yield point of the material than dependent upon the treatment of the bars in rerolling them. It is important that this subject be investigated adequately in view of the possibility of salvaging by rerolling large quantities of old rails for use in reinforcement bars.

This question is closely linked with the subject of deformed bars and allowable bond stresses between concrete and steel. Some types of deformed bars develop weakness on bending due to more or less sudden changes in area of section. Present practice tends toward elimination of sudden changes in section for the above reason, but the efficiency of a bar in resisting the tendency to slip is involved in this to an important degree. Tentative standards of the joint committee on standard specifications for concrete and reinforced concrete permit a bond stress 20 per cent greater for an approved deformed bar than for a plain bar but the committee has arrived at no agreement as to the shapes of deformed bars which they approve. It has not even agreed on the form of test specimen which will give the proper comparison between plain and deformed bars. The divergencies of opinion on the questions involved in all of the reinforcement bar problems are sharp and further extensive investigation of the entire problem is imperative.

If the cost of steel structures is to be lowered, it can most effectively be done by increasing the stress and using the material more efficiently. The increase from 16,000 to 18,000 pounds per square inch for the new hotel Statler in Buffalo is a move in the direction which is receiving considerable consideration. If steel is to hold its own in cost with other structural materials, particularly reinforced concrete, the stresses must be increased.

The bureau of standards has made a study of the present status of this subject, based on ordinary structural steel, taking account of conclusions drawn from various tests on solid and fabricated columns made at the bureau and elsewhere, as well as present practice as illustrated in manufacturers' and engineering hand books and as formulated in some 63 municipal and other building codes, including also some foreign specifications and those proposed by various American committees and prominent structural engineers. It is expected that this survey will be published shortly in full. In that paper, emphasis is laid upon the necessity for inspecting and testing structural steel if more than one quality is commonly used. This and the obtaining of higher strength would increase the cost of the steel somewhat.

Designing for Actual Loads

The same results might be obtained by designing structures for the actual maximum loads they would carry. A lightly loaded residence would thus require periodic inspections to prevent its being overloaded if a change in the surrounding made it desirable to use it for manuacturing purposes. If the load is constant and its value known it is probable that the yield point could be approached before failure occurred. The greater factor of safety required by most city building codes is made necessary by the uncertainties of the properties in the material and the load which will actually occur. Nearly all codes for

American cities limit the stresses to 16,000 pounds per square inch.

This paper will permit but a passing reference to the important subjects of riveting and welding structures. Attention might again be called to the report of the joint committee on the effect of sulphur on rivet steel. In this report mention has been made of the early use of nickel steel rivets in bridge construction which permits use of rivets of smaller section. In spite of the apparent economy and advantages to be thus secured, their use does not seem to have increased to the extent that might have been expected. There are undoubtedly outstanding factors yet to be considered, thus the nickel steel rivet is somewhat harder at the temperature at which it is driven and may fail to fill the hole as thoroughly as a carbon steel rivet. It is also more difficult to cut out cold nickel steel rivets owing to their greater hardness and toughness. It would seem these difficulties were not hard to overcome; thus, use of the newer electric rivet heating furnace would enable the operator to produce a higher temperature and consequently the softness necessary to drive the rivet satisfactorily, and the burning-off method could be used to remove cold rivets readily.

As to welding of steel structures, rapid progress is being made, there having been constructed some 20 or 30 structures of note, some of them large ones, which have been electrically welded. According to Prof. F. D. McKibben, most of them have not been carefully designed with welding in view. Many in fact were designed as riveted structures but were then changed over by shop men to be electrically welded. The development of stresses due to welding is not comparable with the stress conditions of riveting and suitable allowance should be made in design and erection to provide for these differences. There is also need for much more experimental work in the testing of welded joints. Professor McKibben states that his examination of welded steel structures shows the tension tests, as ordinarily made on butt welded specimens, are not of much value in giving adequate data to designers. What appears to be needed is tests on the shearing strength of welded joints.

The art of welding is still in its infancy and there is a great deal yet to be done as in the improvement of technique of the various methods, and the choice of welding rods to produce welds in which the added metal is of satisfactory quality. The bureau has done some work along these lines particularly with reference to studies of welding and the study of gas content of welds as affecting physical properties and the American Bureau of Welding is actively carrying out an extensive research program covering many problems in development and use of welding.

A problem relating to structures in the comparison of welding and riveting is being carried out at the bureau in connection with the American Bridge Co. which has been experimenting with a new process of resistance electric welding making use of pressed or inserted buttons to localize the welding action. About 150 comparative tensile tests of plain plate riveted and welded joints were made. The welded joints averaged about 15 per cent stronger than the riveted ranging from 2 per cent to 23 per cent. In no case did the welded joint show a lower strength than the corresponding riveted joint.

The general conclusion is that welding shows sufficient promise of becoming an economical substitute for riveting in structural members to warrant the extensive series of tests which would be necessary to establish the limitations of its usefulness.

Making Machine Handles from Strip Steel

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partment and back to other presses. An ingenious carrying device has been worked out at the Rockwood plant. This is shown in Fig. 8. It is made out of strip steel in a form similar to a wheelbarrow except that two supporting arms project upward at the lower end in such a way as to catch lugs which are fastened on opposite sides and slightly above the center of the containers. The leverage is such that a relatively slight pressure on the handles is sufficient to raise the full container off the floor and it then is easily moved by hand on the wheels of the carrier.

After being completely formed in the press department the handles are sent to the finishing department where they are polished and buffed on canvas wheels. This operation briefly is as follows: First the fine scratches of the press department are removed by passing the handle back and forth over a wheel coated with No. 90 emery. The next operation uses No. 100 emery, and the third No. 120. The handles are then oiled and finish ground on a wheel surfaced with oil mixed with No. 150 emery, and afterward are buffed on a cotton buffing wheel. This particular finishing operation is still in its formative stage and the intention is to use a formed synthetic grit wheel which will just fit the contour of the handle and so make it unnecessary for the operator to do more than hold the handle in one position against the wheel.

How German Coal Sales Syndicate Operates

Since the French advance into the Ruhr interest has been concentrated on the activities of the German *Kohlensyndikat* or Coal Sales syndicate, as it is called in English. This organization disposes of about 80 per cent of all the coal mined in Germany and also takes care of all the shipping details in connection with the sale of this coal. It was founded in a modest fashion in 1893, when it received its present full official title, which is the *Rheinisches Westphalisces Kohlensyndikat.* It is a limited liability company but all its shares are held by the German coal-producing companies and also by iron and steel firms which are among the greatest consumers of coal and coke.

Since its foundation it has split into three minor organizations: One, the *Kohlen Kontor,* for the sale and transport of coal in Germany by the river Rhine and its canal system; the second, which sends coal down the Rhine to Holland; while the third sells coal in Belgium and before the war had its main seat of operation at Antwerp.

The *Kohlen Kontor,* by its articles of association is strictly limited to minor operations. Any contract over 10,000 tons is reserved for the parent body. This company has one of the largest river fleets in the world, consisting of over 800 large coal barges and 130 tugs.

The lower Rhine branch of the syndicate has a river fleet of 100,000 tons burden and 100 steam tugs. It has the exclusive right to sell coal in Holland and for export from Dutch ports. Finally, the Belgian syndicate, which is the youngest of the three, sells coal in Belgium and for export, but since the war it has been obliged to work for its Belgian owners only.

The *Kohlensyndikat* and its three subsidiary companies are operated exclusively for the sale and transport of the coal produced by the mine owners, who have always been extremely jealous of its power and unwilling at any time to give it a long charter. The last of the agreements under which the syndicate exists expired in 1922 and was then renewed for one year. Normally, therefore, this huge organization ought to come to an end on March 31 next, when all its constituent companies, be they coal companies or river navigation companies, would recover their entire freedom of action.

Promoting Health in Industry

A Series of Related Articles Dealing with Important Problems as They Affect the Industrial Workers—Consideration Is Given to the Best Practice in Eliminating Hazards and Providing Protection

BY C.-E. A. WINSLOW

IV—Sanitation in the Factory

IN PRECEDING articles of this series we have considered certain special problems of industrial hygiene such as those created by the production of poisonous fumes and irritant dusts. There are other precautions against preventable disease of a more general nature which require consideration in the factory, although they are quite as important in the schoolroom or in the home.

Diseases of the communicable type are of course due to parasitic germs which grow in the body as a mold grows in jelly and poison it by the chemical toxins which they form. The great majority of bacteria and other germs are entirely harmless. They are found everywhere, in water and soil and particularly in decomposing organic matter and some of them, like those which maintain the fertility of the soil, are highly beneficial to mankind. The relatively few forms which cause disease are specially adapted to live in the rich warm fluids of the human body and cannot survive long anywhere else. Every case of communicable disease, such as tuberculosis, typhoid fever, diphteria, influenza and the common cold, results from the rather direct transfer of the specific germ from one human being to another. If we can prevent this transfer we shall control communicable diseases.

Since the germs of communicable disease generally leave the bodies of infected persons in the various discharges, it is first of all important to care properly for these discharges. Promiscuous spitting, for an example, is an obvious and important danger since the sputum of those who appear at the moment to be well may often contain germs of disease to which the person discharging them is resistant but which are capable of producing severe attacks in others. In factories where expectoration is common it is therefore essential that an ample supply of cuspidors should be provided, best perhaps the cardboard type that can be burned, or wide mouthed metal cans filled with sawdust. In shops where the employes are of a higher type where expectoration can be entirely prevented, the cuspidor should be eliminated.

Provision for the proper disposal of bowel wastes is another important point in shop sanitation. In small factories where no water carriage system exists privies should be placed at a convenient distance and maintained in an absolutely flyproof condition. Where water closets are installed they should be located in special compartments with ample light and air. Wherever possible, these toilet compartments should be on the outside of the building so as to provide for the free access of daylight; where inside toilets are used they must be amply lighted at all times from artificial light sources. A dark toilet room is certain to be a dirty toilet room and a dirty toilet room furnishes the most dangerous opportunities for transmitting the germs of communicable disease from one person to another.

Water Supply of Importance

The water supply of the factory is another point of prime sanitary importance. Its original source must be free from any possibility of sewage contamination. This means that taps connected with a canal water system should never be placed where the operatives may use them for drinking, since canal water is reasonably certain to receive the discharge of sewers above. The labeling of taps "Canal Water—Do Not Drink" is not a sufficient protection since such a warning is certain to be ignored by the ignorant. If a city supply is not available water from a driven well generally will be found most satisfactory, provided it is analyzed three or four times a year at some competent laboratory to make certain that it is free from pollution.

The common drinking cup is now universally recognized as an admirable means of spreading disease germs from one mouth to another and should not be be tolerated in any well managed factory. Paper drinking cups or bubble fountains should be used. A simple bubble fountain can be made by constructing a short vertical section of pipe, closed at the top, and with a short side branch coming off at an angle of about 30 degrees with the vertical so as to shoot a stream of water upward when a hand valve below is opened.

The common drinking cup is of course only one of many means by which disease germs may be spread. The common washing trough is another of almost equal importance and, where long troughs are provided for hand washing, they should have no outlet plugs so that only running water may be used.

Occasionally one finds a special industrial process which involves peculiar dangers of disease transmission. Thus in textile mills it used to be the custom to draw the thread through the shuttle by the suction of the mouth. In certain states the use of shuttles of this type has now been forbidden by law.

Even when all such specially easy channels of disease transmission have been eliminated there will always remain certain opportunities for direct contact infection between the persons who congregate in a factory workroom. It is quite impossible to guard entirely against the spread of communicable disease. It will materially aid in reducing such diseases, however, if it is understood by the foremen that it is economical in the end to keep out of the workroom persons who are obviously suffering from some sort of contagious disease which may be spread to others. Coughing, sneezing, running nose and eyes are signs that something is wrong and where

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Electric Heating Advance Rapid

Last Few Years Have Seen Many Applications of Electrical Heating in the Iron and Steel Industry — Main Advantages of Electricity as Operating Medium Are Economy, Cleanliness and Simplicity of Control

BY F. A. HANSEN

THE rapid strides made in electric heaters during the last few years probably have been equalled by few types of equipment. Even when the electric motor was replacing the steam and combustion engine, we did not find such rapid advancement in methods and applications. However, due probably to the successful replacement of engines by electric motors, the electric heater in its various forms is being more readily accepted in the industrial plants.

Considerable still is to be done in the development of electric heaters before they will stand on a par with the electric motor. In most cases the cost of an electric oven or furnace is several times that of fuel-fired equipment, and generally upon comparing the cost of power per kilowatt-hour of electricity with the cost per pound of oil or cubic foot of gas, it is found that the electric cost will be the higher. Electric heat, however, eventually will supersede the present applications of heat, just as the electric lamp superseded the gas and kerosene lamp in the illumination field. Electric lamps were not accepted and adopted because their initial cost and operating cost was lower than gas or kerosene lamps, but because of their superiority and lower maintenance costs. which resulted in a lower overall cost.

Electric heating is the only form of heating which can be controlled at the will of the operator, thereby giving greater accuracy in handling a product. The application of automatic control eliminates the human element and permits the duplication of results obtained day after day. Consequently the rejects in a process are practically eliminated, giving a lower production cost per unit. Electric heaters can be applied to the point where heat is desired. The heat is clean and does not contain elements which are detrimental to a process.

It is intended to confine this article to resistance type of electrical heaters used in the steel and associated industries. These heaters are divided properly into three classes: Industrial appliances, low temperature ovens, and high temperature furnaces. Of these three classes, the latter can be subdivided into heat treating and forging furnaces.

In this class of industrial heating appliances are those appliances most frequently found in repair shops, etc. They are the heaters applied to special apparatus, such as heaters for the heating of rolls in a sheet mill after the week-end shutdown, or for relieving strains on new rolls; heaters on molding machines in the steel foundry for heating metal patterns to increase the production of the molding machine; heaters for heating crane cabs and isolated places about the plant; heaters for maintaining temperatures in tanks, pipes, etc., during the winter months.

Melting Pots Prevent Burning

Electrically heated solder and babbitt melting pots with automatic control soon save their initial cost in savings due to prevention of overheating and burning of solder or babbitt, which causes a separation of the metals composing the alloys. Electric soldering irons and other such appliances are convenient around the plant and shop.

In practically all plant repair shops, a coil and armature baking oven is needed since by dipping and baking coils and armatures their life is greatly increased. In many cases the complete motor frame with its field or stator coils is dipped and baked. This insures the coils being absolutely moisture proof in the motor frame. Generally these coils are baked at low temperatures in the neighborhood of 200 degrees Fahr. and for long baking periods. With the electric oven the coils can be put on a rack in the oven and with the temperature set at the desired value, the bake can proceed during the night without the presence of an attendant to maintain the proper temperature. If the temperature rises too high, the insulation may be damaged, whereas when too low a temperature is maintained, the coil will not be baked satisfactorily.

The control of one of these ovens is simple. A thermostat element is placed in the oven chamber in the vicinity of the charge. The element actuates a contact making device which in turn operates a main line contactor through a relay. This is a "high" and "low" contact on the thermostat.

Another interesting application of the electric oven is that of the core baking oven for the foundry. It is claimed that actual operation shows the electrically baked core to be from 50 to 150 per cent stronger than the core baked by a fuel fire. The foundryman may argue that a core of such greater strength is not necessary. The reply to this is that less binder can be used to obtain cores of sufficient strength, therefore an additional saving in the cost of the binder mixture results. A well baked core is essential in the foundry, considering the cost of a new casting and mold when a core fails during pouring.

On average installations of electric core baking ovens a production of 12 pounds per kilowatt-hour is being obtained, in other words, approximately 166 kilowatt-hours are required per ton of green cores. The baking temperature of small cores generally is about 400 to 450 degrees Fahr. and a baking period of one hour is found most satisfactory. Large cores are baked for longer periods at lower temperatures.

Departing for a moment from the steel industry, we might mention the automobile industry, which probably is the greatest user of electric japanning ovens. Careful examination of a sample of electrically baked japan or enamel, shows an entirely different structure from the direct-fired, gas baked product.

The popular gas oven is the direct-fired type and sufficient air must be passed through the oven to provide for perfect combustion of the gas flame. In passing the hot gases of combustion over the enamel, minute blisters are formed on the surface. Eventually these blisters crack open and allow moisture to attack the metal. Soon rust is formed which is not only injurious to the metal, but it loosens the enamel. In the electric oven the amount of air passing through the oven can be reduced to the minimum necessary to draw off the volatile matter from the japan or enamel.

Where plant production is such that large conveyor ovens can be used, the recuperative type seems to be popular. The average type of recuperative oven is built U shaped, the com-

From a paper presented before the Chicago section of the Association of Iron and Steel Electrical Engineers, Oct. 11, 1922. The author is a combustion engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

pleted work passing the parts entering the oven. Considerable heat is given up by the completed work, which in some cases amounts to from 40 to 50 per cent of the heat required by the work.

Heating of industrial plants by electricity is yet in its infancy; however, a number of installations are in operation at present and are competing with the various other forms of heating. Contrary to the common practice of placing steam coils on the walls under windows, the heating units are placed in a box equipped with a motor-driven blower connected so that air is driven through the heater coils and into the room. In this manner the heat is generated at the point where it is to be used. The temperature control is automatic, thermostats controlling the heaters with variations of temperature.

Furnaces Are Important

Without question the application of electric heaters to the furnaces used in the steel industry is the most important use of electric heat. Practically all of the heating applications in the steel industry deal with temperatures in excess of 1000 degrees Fahr. They are divided into those temperatures requiring not greater than 2000 degrees Fahr., to which the metallic resistor is applicable; and those operating at temperatures above 2000 degrees Fahr., to which the carbon resistor principle is applicable. The latter type is one which needs considerable development beyond its present state to make it entirely satisfactory.

Recent installations of electric furnaces for steel treating have proved successful beyond expectations. The superior quality of the work done in the electric furnace, together with the great economy obtained from the operation and maintenance, no doubt have been the determining factors in the selection of the electric furnace for this class of work.

It is admitted that the electric furnace in most cases will require a greater initial expenditure than for a fuel-fired furnace, but the difference in expense should be considered as an investment rather than a purchase. The amount saved by the operation of the electric furnace should be considered as interest on the amount invested.

Considering the cost of operation of furnaces, a number of items must be considered. Probably one of the first will be the cost of the fuel. In the case of the electric furnace, this item will be the cost per kilowatt hour of power consumed by the furnace. For the fuel-fired furnace, the cost of oil, or fuel, per gallon or per unit, together with the handling, etc., constitute the fuel cost. The purchasing of oil storage tanks, in the case of the oil-fired furnace, unloading the oil, handling it and putting it in shape so that it will be usable in the furnace, also is a cost which is chargeable to the price of the fuel.

With the electric furnace an efficiency of 87.5 per cent is obtainable at 1600 degrees Fahr. and with automatic temperature control, which can be applied successfully, the starting of the furnace is accomplished by pushing a button, the temperature in the furnace chamber being controlled automatically by the electrical apparatus.

A uniformity of temperature is obtained for several reasons. It is possible to so place the heating elements in the furnace chamber so as to obtain an equal heat distribution throughout the chamber. It is possible to use an automatic temperature control which will maintain the temperature of the furnace within 0.5 per cent of the desired operating temperature.

The 100 per cent power factor of the electric furnace permits it to act as corrective apparatus to bring up the average power factor of the plant to a point free from penalty by the power company. It increases the connected load of the plant, thereby obtaining a lower average rate for the total power consumed in the plant. The electric furnace is noiseless and free from fumes. Heat losses are small, which permits the furnace being placed almost anywhere it is convenient.

The unit cost of the product treated in the electric furnace is below the cost of a fuel furnace justifying the expenditure of the additional initial cost of the electric furnace; however, the quality of work obtained in the electric furnace is its primary feature.

Comparing fuel costs at 1600 degrees Fahr. of oil, gas and electric furnaces, we will use as a base fuel cost:

100 pounds of 18,000 Btu. oil at 1c per pound.
1000 cubic feet of 600 Btu. gas at $1 per 1000 cubic feet.
1 kilowatt-hour of electricity of 3412 Btu. at 1c per kilowatt-hour.

Under the above conditions $1.00 of electricity used in an electric furnace of 85 per cent efficiency will be equivalent to $3.23 of gas, or $1.08 of oil used in fuel-fired furnaces of 15 per cent efficiency.

Several types of resistor furnaces have been used successfully in the past. These are generally known as the side element ribbon resistor type, the carbon resistor type, and the multiple unit type. Each of the above types has variations in design depending upon the particular application or problem. The side element ribbon resistor type, consists of a heavy nickel-chromium ribbon mounted on the side walls of the furnace. Special refractory supports, forming an integral part of the furnace, are placed in the side walls of the furnace. Return bends of the ribbon element are placed on the supports so that the side element is one continuous ribbon. Ordinarily the voltage of one side element of the furnace is either full line voltage, or a multiple of 110 volts, so that the furnace can be operated direct on the line without the use of transformers. The elements being on the side walls of the furnace, the heat is radiated directly from the two points of supply. The heating elements are of the open, or radiant form. Automatic temperature control generally is applied to furnaces using this type of construction.

Another type mentioned above is the carbon resistor type. In this furnace the heating element is composed of a trough mounted on the side wall of the furnace chamber and running the entire length of the furnace. This trough is filled with granulated carbon by electric current or graphite electrode buried in the granulated carbon at each end of the trough. Heat is generated in the granulated carbon by electric current passing between the electrodes. An arched roof reflects the heat from the resistor to the charge in the furnace. The granulated carbon used for the resistor material is consumed while operating the furnace and is replenished periodically. The temperature control of the furnace is accomplished by means of a tap changing switch on the furnace transformer whereby reduced voltages are applied to the resistor for lower heats. Meters showing the power input to the furnace are used to assist the operator in maintaining a desired temperature. Since this furnace has two elements it can be used on single, two or three phase, depending upon the transformer connections.

Two Types of Construction

The multiple unit type of industrial furnace is built in two distinct forms of construction. One has the radiant form of element, while the other has the muffled form of element. Each of the above has its particular application depending upon the process of heating involved. The same general scheme of furnace construction applies to both of these types with the exception of the method of support-

ing the heating element. In the furnace using the radiant form of element the return bend coils are placed in the vertical grooves of corrugated fire brick which also serves as the furnace lining. The heating element, consisting of return bend coils of solid No. 1 gage wire with large butt-welded terminals, is held in place by tee supports placed in longitudinal grooves in the fire brick lining of the furnace. The furnace chamber is built up of multiple units of return bend coils in the top, sides and bottom of the furnace chamber. The bottom units are protected by lock joint floor plates of a cast nickel-chromium alloy.

In the muffled element type of furnace the return bend coils of solid wire rest in the longitudinal grooves of muffle plates held in place by tee supports, with the grooved side of the muffle plate toward the fire brick lining of the furnace chamber. Like the radiant element the units are placed on all sides of the furnace chamber and can be replaced readily in case of burn-out. In the case of either type of element, all connections between the multiple units are made outside of the furnace where they can be air cooled. It is also possible to connect the elements in proper groups for single, two, or three phase circuits.

In the majority of applications of this type of furnace, transformers are used to reduce the voltage to a value proper for the element, thereby using low voltage on the heating element and permitting a heavy cross section of element which is desirable in furnace design. A reduced capacity tap is supplied on the transformer for holding the temperature of the furnace after it has been brought up.

The three above mentioned types of construction are the most common in present day use. However, variations of the types mentioned are in use quite extensively. One manufacturer uses what is commonly called the hair-pin element. Another manufacturer builds a crucible type of furnace used in connection with the hump method of treating steels. Still another company has brought out a new design of heating element which can be removed from the outside of the furnace.

More Development Necessary

Another field which will become the user of a large number of electric furnaces is that requiring temperatures in excess of 2000 degrees Fahr., and includes forging, rivet heating and treating high speed steel. Unfortunately furnaces for this range of temperature have not reached the stage of development the lower temperature furnaces have. Suitable resistors for attaining and maintaining temperatures in excess of 2000 degrees Fahr. have not been worked out. Granulated carbon resistors and carbon plate resistors have been used, but it is safe to say that at the present time those which have been developed are in the experimental state. The principal difficulty is in the ability of securing resistors which will last long enough to make the installation of electrical furnaces practical.

Some interesting applications of furnaces have been made in the steel industry. Conveyor and pusher types of furnaces have been designed for the re-heating of billets for sheet mills. These furnaces consist of a long heating chamber having nickel-chromium slide rails in the floor of the furnace upon which the billets are carried and heated while on their route to the rolls. Sheet heating furnaces are located in the near vicinity of the rolls for the reheating of the sheets. By maintaining a constant temperature of 1650 degrees Fahr. in the furnace chamber, the sheets will never reach too high a temperature. This, together with the fact that the heat is electrical heat, insures a minimum amount of scale and obviously the reduction in scale means a higher grade product.

The demand for annealed steel castings has increased considerably during the last few years. Where several years ago only 20 per cent of the steel castings turned out by steel foundries were annealed, today 75 per cent of the castings are annealed. Perfect annealing, which can be accomplished most successfully in the electric furnace, is done generally in a car-bottom type of furnace. These cars can be fitted with heating elements in the floor of the car, thus increasing the rate of penetration of heat into the steel castings. With elements in the floor of the car as well as in the sides and top of the furnace the further advantage is obtained of heating the steel uniformly from all sides and relieving the strains equally.

Where the production is of sufficient size to warrant, the recuperative type of car-bottom furnace can be used. This consists merely of a preheating and cooling chamber in addition to the heating chamber. The hot charge releases its heat to the cold charge and brings it up to a temperature from which it is raised to the final desired temperature. Productions as high as 16 pounds of steel per kilowatt-hour of power are obtained in this type of furnace.

In the wire and ribbon steel industry conveyor types of furnaces are used. The wire or flat bar are passed through the furnace for heating, quenched upon leaving the hardening furnace, and then carried through the drawing furnace. This permits a continuous process of the wire or ribbon after it leaves the dies or rolls until it is coiled on reels for further handling. In the case of copper wire it can be passed along from the drawing furnace to tinning or enameling baths. Where the continuous process is not practical for handling coils, a rather efficient furnace has been designed, consisting of vertical tandem furnaces and hydraulic lift baskets to support the charge. The furnaces are cylindrical and have open bottoms so that the charge can be raised up into the chamber. For hardening steel or annealing copper a bath is located under the chamber and the charge lowered into it.

Many Special Types Built

For heat treating roller or ball bearings, inclined furnaces are used, the rollers or balls sliding or rolling down the furnace chamber at a definite rate and into the hardening bath. Another furnace is being built for an ax manufacturer. This furnace consists of a conveyor supporting the axes so that only the cutting edge passes through the furnace chamber.

Applying the electric furnace to galvanizing pots in a sheet mill it is found that some exceptional savings can be effected. The spelter used in the tank is an alloy composed of several different metals having slightly different melting points and densities. Absolute temperature control is essential in maintaining the bath at the temperature at which the metals composing the spelter are in perfect suspension. Otherwise the metals will separate and deposit in layers in the tank. By maintaining the temperature at the desired value, the forming of dross is greatly reduced. On account of being able to apply electric heat uniformly to the tank, the life of the tank is increased, and cost of renewal reduced.

Numerous other applications of electric furnaces have been made. The electric furnace has reached a stage where we are assured that it can be applied to practically any process now accomplished by fuel-fired furnaces.

Employes of the Orton-Steinbrenner Co., machinery manufacturers of Huntington, Ind., will receive a bonus of 47 per cent of their wages for 1922. Half of the bonus will be in cash and the remainder in six-year bonds. The company will enlarge its plant this year, doubling capacity.

Offers Field for Electric Furnaces

With Low Power Rates, Shanghai Is in Position To Make Electric Steel at a Favorable Cost—No Steel Foundries in China—Estimation Shows Castings Could Be Produced for Less Than $35 Per Ton

BY LANSING W. HOYT

AT THE present time China proper has but one electric steel furnace. This furnace is now being installed in the foundry of the Kiangnan Dock and Engineering Works at Shanghai. An electric furnace is operating in the British colony of Hongkong, but strictly speaking, there is not today a single steel foundry in China—either bessemer, open-hearth, malleable, or electric.

The only city in China in which an electric furnace, either ferrous or nonferrous, could be operated profitably at the present is Shanghai. This city has greatly increased its municipal supply of electric power and the International Settlement power house at Shanghai is as modern and efficient as any station in the world. The cost of electric power to large users of current is lower than it is in most parts of America. Power is delivered to cotton mills in Shanghai at less than 1¼ gold cents per kilowatt hour. The price charged for electric power at Milwaukee averages nearer 1¼ gold cents.

To be more specific, the writer will give below cost figures for actual operation in a cotton mill at Shanghai using municipal power. Electricity is applied on what is known as the "bulk" system of charging, whereby two separate and distinct charges are made. These charges are known respectively as the "capital charge" and the "running charge."

The capital charge is based upon the amount of capital which the Shanghai electricity department has to expend in order to meet a definite demand. This naturally varies to some extent with location of such demand in relation to the position of the municipal generating station. The running charge is based almost entirely upon the actual cost of generating energy, and naturally is greatly influenced by the cost of fuel in force at the time. To meet this variable factor a basic charge per kilowatt hour is made, based upon the assumption that fuel can be purchased at a cost of 1.6 gold cents per 100,000 B. t. u.'s. In the event of this assumed cost being either greater or less than the figure given, then a proportionate increase or decrease in the basic running charge is made effective. The equity of this arrangement will be apparent when it is borne in mind that the cost of fuel is outside the control of the municipal authorities.

How this system operates is best shown by a concrete example. A cotton mill, requiring 1000 kilowatts, located near the main station in Shanghai, is supplied with power at 6000 volts. In this case the capital charge is $26.40 gold per kilowatt hour per annum and the basic running charge is 0.00616 gold cents per kilowatt hour. To arrive at the "all in" cost per kilowatt hour, let us consider the operation of the mill over a month's time. On this basis we obtain the capital charge as follows: $26.40 12 (months) x 1000 (kilowatts)=$2200 gold. The consumption in kilowatt hours during the month was:

27 days × 24 hours × 65 per cent of 1000 =	421,200 kwh.
421,200 × $0.00616,	$2,594.40
Capital charge	2,200.00
Running charge	2,594.40
Total charge	$4,794.40
"All in" cost	$4,794.40
Kilowatt hours	421,200

or $0.01138 gold per kilowatt hour.

Allowing for fluctuations in the price of coal at Shanghai which would affect the running charge, the writer considers his figure of about 1¼ gold cents per kilowatt hour as ample. The exact figures of this mill, of course, indicate about 1 1/7 gold cents.

By means of these figures, those interested will be able to compare the cost of electrical energy in Shanghai with that prevailing in manufacturing centers in America. The writer is confident it will be found that the supply given by the municipality of Shanghai will compare favorably.

So much for the cost of power, which in electric furnace practice in America usually constitutes one-third the cost of the steel in the ladle. Under conditions obtaining at Shanghai an accurate estimate of electric hot metal costs can be made as nearly all materials entering into these costs have a known value in Shanghai, although none of these materials have ever been utilized in steel foundry practice here.

Let us assume that a 3-ton acid electric furnace is to operate in Shanghai and that a rate of 1 1/7 gold cents per kilowatt hour has been contracted for from the city electricity department. An acid furnace melts faster and consequently consumes less power. It is well suited to this market, because furnace practice in Shanghai need only be a straight scrap melting process. The furnace itself, of course, must be 3-phase for the city station could not allow a single-phase furnace to operate. With this assumption, the figures given below have been deduced from what are known values for the scrap, alloys, refractories and labor necessary to place an electric heat in the ladle. Electrode costs cannot be quite as accurately esti-

Theoretical Cost of Electric Steel in China

Based on 6000-pound charge. Figures in net tons

Materials	Price per ton gold	Consumption pounds	Cost per heat gold
Plate scrap, 25 per cent	$22.00	1,500	$16.50
Punchings, 10 per cent	18.00 (local)	600	5.40
Axle turnings, 25 per cent	18.00 (local)	1,500	13.50
Operating scrap, 40 per cent	19.70	2,400	23.64
Loss, 4 per cent	0.78	240	1.63
Ferromanganese	75.50	50	1.88
Ferrosilicon	70.00	25	.087
Aluminum	383.00	5	0.97
Ganister	....	150	1.00
Silica sand	....	50	1.00
Electrodes	200.00	65	6.50
Brick	....	....	1.80
Ladle drying	....	....	5.00
Electricity	1 1/7c per kw.h.	1,800 kw.h.	20.52
Labor	....	....	1.00
Laboratory expense	....	....	1.50
Total for heat	....	6,585	$102.71
Total per net ton	....	....	$34.24

This is the third article discussing the iron and steel situation in China. The first appeared on page 227 of the Jan. 18 issue and the second on page 303 of the Jan. 25 issue of IRON TRADE REVIEW. All were taken from reports issued by the bureau of foreign and domestic commerce, Washington. The author is trade commissioner, Shanghai, China.

mated because hitherto none have been imported into China. The approximation of costs is shown in the accompanying table.

From the information given in the table, it will be observed that while the most desirable scrap for electric furnace work is more expensive in China than it is in America, still the cheaper electricity and the lower priced labor brings the cost of the hot metal in the ladle down to a figure which compares favorably with good electric steel practice in the United States.

Metal Suited to Chinese Use

The Chinese are excellent patternmakers and molders and have been engaged in iron foundry work for generations. There is every reason to suppose that they would, with capable supervisions, readily and efficiently grasp the details of steel foundry operations. Electric steel can be melted in Shanghai as cheaply as in most cities of the world and owing to this steel's freedom from oxygen it would be the kind of metal best suited to Chinese practice.

A great adantage obtaining in the Chinese market over markets in America is the high price for finished steel castings. Prices for steel castings in Shanghai range from 25 to 30 gold cents per pound and where emergency work is required even higher prices could be demanded by a steel foundry located here. The Chinese customs returns do not show steel castings as being a product of much value in imports. These customs statistics, however, do not go into detail and while thousands of tons of steel castings enter China each year, they are grouped for the most part under the general term of machinery.

To Conduct Coke Tests on Blast Furnaces

Operation of blast furnaces in the Birmingham, Ala., district in relation to the physical properties of the coke used is to be studied by the federal bureau of mines. Testing methods which the bureau has standardized in the past year are to be utilized. Loss by "solution" of coke in the blast furnace stack gases appears to be detrimental to economical operation. The relative reactivity of cokes with carbon dioxide is to be determined quantitatively by a laboratory test devised at the bureau's southern station. Correlation of test results with those of actual furnace practice will be undertaken during the present year. The work will be conducted in connection with furnaces operating on coke from Alabama, Pennsylvania and Illinois coal.

Experiments made in the Birmingham district during the past year will be supplemented by further work at furnaces in the Pittsburgh districts and at the furnaces of the St. Louis Coke & Chemical Co., Granite City, Ill., which are operating on coke from Illinois coal. By means of analyses of gas taken from different parts of the blast furnace hearth, the rate of combustion of different kinds of coke will be determined under actual operating conditions.

In co-operation with the fuel section of the Pittsburgh station of the bureau, the relative combustibility of cokes from Alabama, Pennsylvania, and Illinois coal is being determined in the Kreisinger furnace. Rates of combustion as high as 100 pounds per square foot of grate area per hour are being employed. The influence of the size of the coke pieces is being investigated. Gas analyses at different points in the fuel bed are being made.

In making calculations of the efficiency of operation of a blast furnace, the amount of carbon available for combustion at the tuyeres is taken as the so-called fixed carbon of the proximate analysis. The official determination of volatile mater is made at a temperature of 950 degrees Cent. Since coke is subjected to temperatures up to 1800 degrees Cent. before being burned at the blast furnace tuyeres, there is the possibility that less carbon is actually "fixed" in a condition to reach the tuyeres than is indicated by the ordinary proximate analysis. Experiments are under way by the bureau in which the volatile matter of several varieties of metallurgical coke will be determined at temperatures up to 1700 degrees Cent.

There is considerable demand in the industries for a small scale apparatus which will determine the character of coke and by-products to be obtained from a given coal. The bureau plans to construct an apparatus capable of carbonizing 100 pounds of coal and to calibrate it by testing several varieties of coal on which large scale operating data are available. The physical properties of the coke, its combustibility, and reactivity with carbon dioxide will be compared with the coke produced by large scale operation. Analysis and yields of by-products will be compared in like manner. The attempt will be made to so modify the apparatus, if necessary, that the coke and by-products produced will be identical in quality and quantity with those produced in actual practice.

There are some 30 different coal beds in Alabama, while only six to eight of these are known as good coking coals. Information is much needed as to the coking properties of other coal seams of the state. The bureau plans to investigate the suitability for coke making of the typical coals of Alabama, first in a small scale apparatus and later to test on a larger scale such coals as show promise from small scale tests. A study of the literature of low temperature carbonization is being made, and the suitability of Alabama coals for such treatment will be considered in connection with the work at higher temperatures.

Makers of Steel Lockers To Study Sizes

Simplified practice and elimination of waste have been urged by the department of commerce for not quite 18 months, yet 24 industries are actively engaged in or have completed a program of simplification and 19 more are taking the preliminary steps. In the short month of February four industries are coming to Washington to lay the groundwork.

The leading manufacturers of steel lockers are to assemble in Washington, Feb. 15. At the present time approximately 40 sizes of lockers are marketed. One manufacturer, who turns out 37 sizes, believes at least 29 can be eliminated. How closely these sizes tread one upon another can be seen from the following list of locker sizes:

SINGLE TIER
(Inches)

12 x 12 x 60	12 x 12 x 72*
12 x 15 x 60	12 x 15 x 72*
12 x 18 x 60	12 x 18 x 72
15 x 12 x 60	15 x 12 x 72
15 x 15 x 60	15 x 15 x 72*
15 x 18 x 60	15 x 18 x 72*
18 x 15 x 60	18 x 15 x 72
18 x 18 x 60	18 x 18 x 72*
18 x 24 x 60	18 x 24 x 72
24 x 18 x 60	24 x 18 x 72
24 x 24 x 60	24 x 24 x 72

DOUBLE TIER
(Inches)

12 x 12 x 36*	12 x 12 x 48
12 x 15 x 36*	12 x 15 x 48
15 x 12 x 36	15 x 12 x 48
15 x 15 x 36*	15 x 15 x 48
15 x 18 x 36	15 x 18 x 48
12 x 12 x 42	
12 x 15 x 42	
15 x 12 x 42	
15 x 15 x 42	
15 x 18 x 42	

The eight sizes this manufacturer would retain are designated *. The savings that could be effected were the remaining 29 eliminated are said to be great. Stocks of raw materials could be reduced. Employes could concentrate on a few sizes with increased efficiency and rapidity of operation. Stocks of finished product would be greatly reduced. The opinion is hazarded in advance that price reductions should be made possible.

Following the meeting of steel locker makers in Washington on Feb. 15 the manufacturers of range boilers will confer on Feb. 28.

Treats Briquetting Processes

Briquetting; by Albert L. Stillman; cloth, 466 pages 6 x 9 inches; published by the Chemical Publishing Co., Easton, Pa., and furnished by IRON TRADE REVIEW, Cleveland, for $5.00 net.

Although the art of briquetting has advanced to the point where thousands of tons of briquets are manufactured each year, the texts available on the subject consists chiefly of handbooks. This book presents information in detailed form on the various principles underlying the manufacturing of briquets from various raw materials. The book opens with an analysis of the various raw materials which lend themselves readily to the briquetting processes, and is followed by a description of the multiplicity of presses which fall under the two general classifications, namely the mold and piston type, and the roll type. Diagrams and sketches assist in presenting the discussions on the presses in a clear and comprehensive manner.

The field of raw materials, which may be subjected to the briquetting process successfully, is wide. The author devotes a chapter to a discussion of each of the following briquetting processes which use metals as the raw material: Steel swarf and turnings, cast iron borings and nonferrous metals. After a discussion on binders the substances necessary to hold the materials together in some briquetting processes, a chapter is devoted to the discussion of each of the following materials which require binders; Wood waste, peat and lignite or braunkohle.

Considerable space is devoted to the subject of briquetting of coal in various forms. Chapter XI is a chronology of coal briquetting in the United States and Canada. The history is published to show the difficulties encountered in the past which can be avoided in the future. Many failures have been recorded in briquetting of coal, but the number of successful operating plants continues to grow. The history is complete, starting with the first briquetting plant built at Port Richmond Piers, Philadelphia, in 1872 and continuing to the present time.

Other chapters are devoted to the presentation of information on the briquetting of ores, laboratory reasearch in briquetting and applications of briquetting to chemical engineering. The appendix contains information on the briquetting plants in operation in the United States, charts showing price fluctuations of heavy melting steel borings and steel machine shop turnings, etc. The bibliography following each chapter is complete, and the many illustrations add value to the book as a text for the student.

* * *

Reports on Investigation

The Twelve-Hour Shift in Industry; by the Committee on Work-Periods in Continuous Industry of the Federated American Engineering societies; cloth, 302 pages, 5½ x 8¼ inches, published by E. P. Sutton & Co., New York, and furnished by IRON TRADE REVIEW, Cleveland for $3.50 net.

This volume is the report of the committee on work periods in continuous industry, a committee appointed by the Federal American Engineering societies. The book is divided into three sections, the first section including the introduction, the reasons for the investigation, the work undertaken by the various members of the committee and general conclusions reached, the introduction to the general survey and the situation existing in the iron and steel industry.

The second part or the general survey is the report of an investigation made by Horace B. Drury, member of the staff, Institute of Economics, Washington, who was assigned by the committee to make the investigation in the continuous operating industries with the exception of the iron and steel industry. This report discusses the problem of the 12-hour shift in general and outlines the scope and method of the investigation. Such industries as the metal, glass, cement, lime, brick, pottery, chemical, sugar, salt, petroleum, paper, flour, rubber, electricity, gas, transportation, communication, etc., are discussed, including data on the number of plants, if any, which have changed from the two-shift to the three-shift system. Included in this section is a chapter on the procedure in changing from the two-shift to the three-shift system. The report is closed with a set of conclusions reached after an examination of the data listed in the report.

The third section is a report on the two-shift system in the iron and steel industry, by Bradley Stoughton, metallurgical engineer. The report opens with a sketch of the general conditions in the industry, touching particularly on the necessity for economical operation, the old conditions of operation and the effect on the 12-hour shift, the change that has been brought about in the steel mills by the introduction of improved machinery, the shortening of hours that has taken place from 1910 to 1920, the two and three-shift plans and the questions involved in proposals for shorter shifts. The real issue hinges on the willingness of the men to accept an 8-hour day with 8 hours' pay at the present hourly rate. According to this report, this rate will bring the daily wage of common labor below the amount necessary to support a family in America. The report continues with a discussion on the general considerations in changing to three shifts, labor costs and total costs, peak and valley loads and a general summary of the evidence collected. The foreword to the volume is written by Warren G. Harding, President of the United States.

* * *

Publishes Year Book

Year Book of the American Iron and Steel Institute, 1922; cloth, 551 pages, 6 x 9½ inches; published by the American Iron and Steel institute,

New York, and furnished by IRON TRADE REVIEW, Cleveland, for $15.00 net.

This book constitutes the twelfth volume of a series containing the proceedings of the general meetings of the American Iron and Steel institute.

This volume is the report of the com- of the twenty-first general meeting held at the Hotel Commodore, New York, May 26, 1922, and also the proceedings of the twenty-second general meeting held at the same place on Oct. 27, 1922. The book is divided into two sections, each section including the address of President Gary, impromptu remarks by the members and visitors, and the papers, printed in full, on the technical subjects presented at the general meetings. The discussion following the presentation of the papers also is included.

* * *

Revises Edition on Welding

Oxy-Acetylene Welding and Cutting; by P. F. Willis; cloth, 254 pages, 4 x 6¼ inches; published by the Norman W. Henley Publishing Co., New York and furnished by IRON TRADE REVIEW, Cleveland, for $1.50 net.

This is the sixth edition of this book which has been revised and enlarged by the addition of new matter and engravings. The volume is intended to instruct in the care of apparatus, welding of all metals and alloys, care of expansion and contraction, soldering aluminum, repairing scored cylinders, etc. It should be of use to manufacturers, metal workers, garage men, railroad operators, blacksmiths, etc.

The three types of welding, namely acetylene, oxygen and electric, are explained as well as the various types of apparatus used in the execution of each method. A discussion of the methods and tools necessary in the preparation of the metal for welding as well as a description of the various metals that are adopted to welding is included. Other chapters deal with welding of sheet metal and pipe, boiler welding, welding of various pieces, and welding symbols.

* * *

Sulphur Determinations Discussed

The Determination of Sulphur in Iron and Steel; by H. B. Pulsifer; cloth, 160 pages, 6 x 9 inches; published by the Chemical Publishing Co., Easton, Pa., and furnished by IRON TRADE REVIEW, Cleveland, for $2.50 net.

Much of present day engineering depends fundamentally upon the chemical control analysis for the determination of sulphur in iron and steel. The various ores of iron are analyzed for iron, phosphorus and sulphur before and after mining. For this reason thousands of determinations are made daily, with no indication at the present time that this condition will be changed in the future. This book, embodying a study of the determination, has been assembled for the purpose of making these determinations more intelligently and thoroughly, using the attainments of the past as a starting point for new developments. A part of the past work is repeated, because much of it was unknown, a part being practically hidden in the pages of old journals and foreign publications.

The book is divided into five sections, the first dealing with the sulphur found in ferrous materials, discussing the sulphur compounds and solutions present in iron and steel, the manner in which the sulphur compounds are crystallized and segregated upon solidification of the ferrous materials, and a discussion on the sampling and grinding of the material in preparation for the analysis. The second part calls attention to the eight methods for determining sulphur, as well as presenting the methods for liberating and measuring the sulphur. An outline of the four methods of analysis together with notes on each method is also included in the second part. The third section indicates the results to be obtained from the analysis.

Since chemical determinations vary greatly, a section of this book is devoted to a discussion of the precision of the results from these analyses. The bibliography contains reference articles directly related to the subject. This part of the book is complete, giving references on works dating from 1797 to 1921. Numerical analytical data of importance in the articles referred to have also been included.

* * *

Principles of Business Explained

Engineering Economics; by John Charles Lounsbury Fish; cloth, 311 pages, 6 x 9 inches; published by McGraw-Hill Book Co., Inc., New York, and furnished by IRON TRADE REVIEW, Cleveland.

This is the second and revised edition of this book, written as a text for students in engineering, who probably will find the fundamental principles of engineering economics as essential to success in their profession as a full knowledge of structures. The work offers an opportunity for the engineer to become familiar with the problems in economics which will be present in every engineering endeavor.

The book opens with a picture of the engineer in the work of the world. The picture shows that engineering knowledge, unlike medicinal or legal knowledge, can be converted into community service only through the medium of business, and that consequently the engineer's professional success and contribution to public welfare depends in a great measure on his understanding of the business side of engineering.

The text proper opens with an analysis of the investment problem, followed by discussions on interest, analysis of first cost and operating cost, business units, business statistics, valuation and errors in estimating. The chapter on business units consists of information on private and public corporations together with their organization, control, management and ways of raising capital. The first principles of financial statements and cost keeping are developed from common experience. There is included an elementary treatment of valuation of public service corporations, followed by the derivation and comparison of several depreciation formulas.

The text closes with a chapter on engineering reports and is followed by an appendix containing specimen incorporation papers, numerous tables of formulas and values, a bibliography and an extensive collection of questions and problems.

* * *

Revises Former Pamphlet

Sampling and Analysis of Coal, Coke and By-Products; flexible leather, 184 pages; published by J. M. Camp, director, bureau of instruction, Carnegie Steel Co., Pittsburgh.

Many changes in by-product laboratory practice have occurred during the comparatively brief interval since the preparation of the pamphlet entitled "Sampling and Analysis of Coal, Coke and By-Products," by the chemists' committee of the United States Steel Corp. To obtain results that correspond more nearly to plant practice, therefore, a second edition, equivalent to an entirely new work, has been prepared.

The new edition is divided into two parts, namely, the sampling and analysis of coal and coke and the sampling and analysis of by-products. Features not included in the original pamphlet include details for sampling by-product coke and physical testing of coke; determination of the different forms of sulphur in coal; fusibility of coal and coke ash; analysis of ammonium chloride; a method for calibrating thermometers; complete specifications for thermometers used for testing liquid by-products; and many additional tests for benzol products and tar, such as cloud, pour or cold, freezing point, specific heat, corrosion tests, etc.; wash tests for agitation products; and several tables covering gravities, weights and equivalents for sulphuric acid and aqua ammonia and the conversion factors used in by-product laboratories.

Among the many improvements in the methods described in the first edition, the most outstanding are a freezing method for the determination of light oil in the progressive distillation of coal, details for conducting distillation tests on each of the benzol prod-

ucts and an improved apparatus for the determination of light oil in benzolated wash oil. The second edition may be obtained for $3 a copy by addressing J. M. Camp, director, bureau of instruction, Carnegie Steel Co.

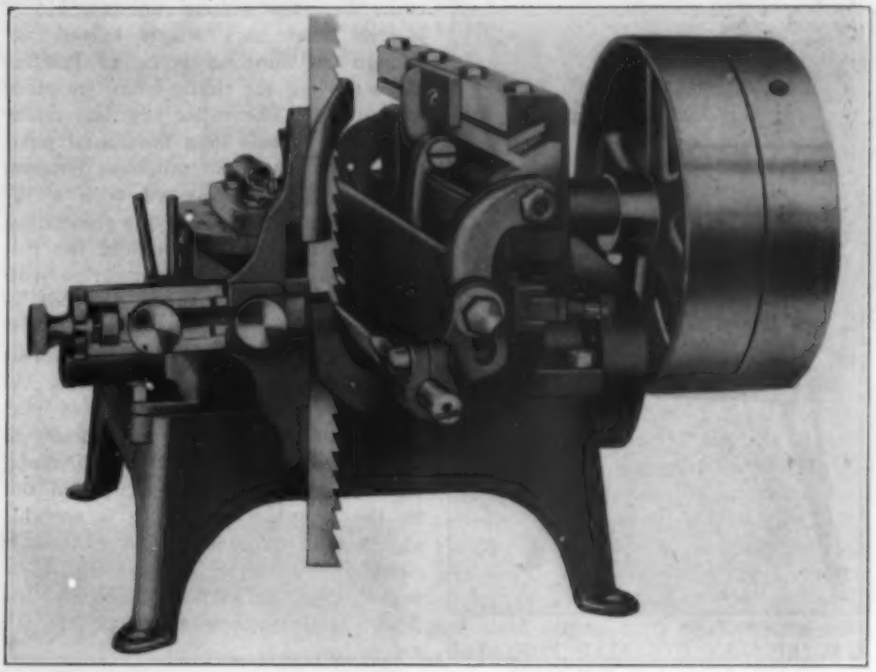
Promoting the Health of Industrial Workers

(*Concluded from Page* 511)

a good industrial medical department exists any employe showing such symptoms should be sent promptly off to the nurse or the doctor for examination. What seems merely a light cold in the head may prove to be the beginning of a severe infection, or may give rise in others to a severe infection. In such cases a few days of absence on the part of one worker may save weeks of lost time on the part of others.

Designs Filing Machine for Metal Saws

A new filing machine especially designed to handle band saws used in cutting soft metal has been introduced recently by the American Saw Filing Machine Co., Boston. The accompanying illustration shows the machine with a section of the band saw in place being filed. The machine operates automatically, is belt driven and compact in arrangement taking little room. The device feeds the saw forward so that the file advances from tooth to tooth in the same manner as when hand filed. The position of the saw and file are positive during filing, and it is claimed the machine will correct for any irregularities in the teeth due to incorrect filing. One of the distinguished features of this machine is the method of feeding the saw. The feed is entirely independent of the teeth, preventing interruption when a broken tooth is encountered. The machine is adjustable to take saws from ⅛ up to 2 inches in width and the feed may be adjusted to file teeth as fine as 15 points.

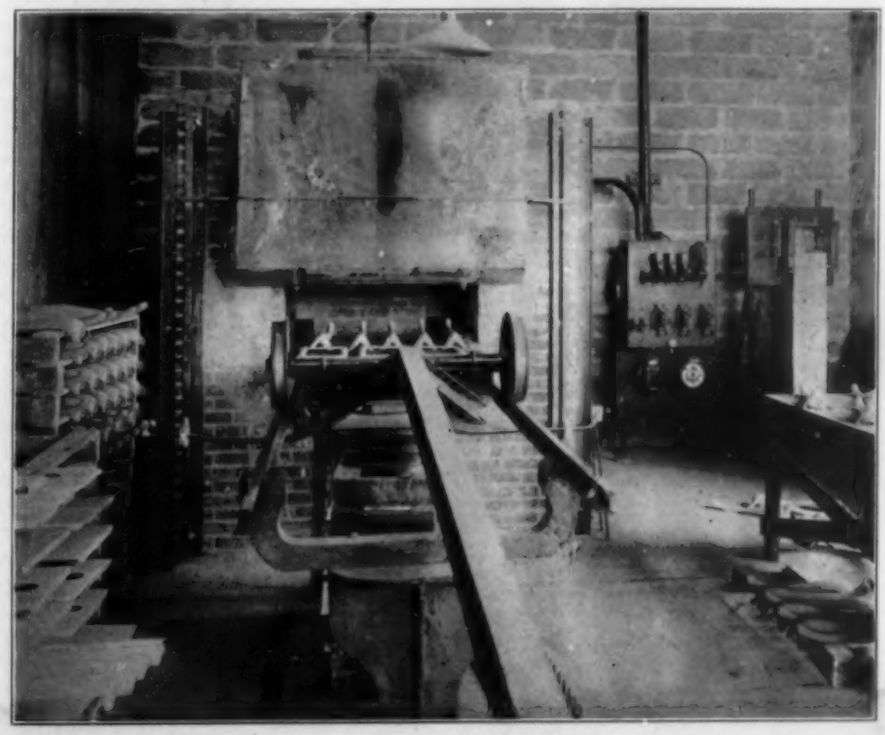


AUTOMATIC BAND SAW FILING MACHINE DESIGNED FOR BELT DRIVE DIRECT FROM THE LINE SHAFTING

Installs Electric Furnace to Bake Enamel

A new electric furnace used to bake vitreous enamel on cast iron stove parts and on sheet steel has been installed recently by the Galusha Stove Co., Rochester, N. Y. The furnace operates at from 1200 to 1400 degrees Fahr., with a maximum temperature range of 2000 degrees, and has a connected load of 118 kilowatts at 230 volts, 3 phase and 60 cycles. The capacity is estimated at 7 pounds of metal per kilowatt hour.

The equipment, as shown in the accompanying illustration, consists of the furnace proper and the automatic control panel and instruments. The furnace is constructed of brick with refractory lining, having a sliding door giving access to the upper compartment from the front. The interior is divided horizontally into two compartments by narrow shelves on each side wall which support the tray holding the work to be baked. The nickel chromium heat units are mounted away from the side walls, and are about evenly distributed between the upper and lower compartments. This arrangement together with the curved roof tends to cause the heat to strike the work equally from all directions. The temperature is automatically controlled by an automatic temperature control instrument and an automatic control



ELECTRIC ENAMELING FURNACE HAVING AUTOMATIC HEAT CONTROL INSTRUMENTS

ELECTRICALLY OPERATED PORTABLE SAND RIDDLING MACHINE

panel carrying contactors and overload relays.

Two temperature settings and baking durations are required for the two types of material. The company operating the furnace buys the power from a central station on what is known as the three rate schedule, whereby power used at a steady rate for 24 hours a day can be purchased at the lowest rate. A schedule has been worked out for the operation of these furnaces so that its running periods are dovetailed with the other power using devices of the plant, with the result that no additional demand is created during the daytime. By not running the furnace during peak loads in the winter months further economy has been effected in the operating costs. The economy that has resulted from the use of this furnace is due, in addition to the factors already mentioned, to the speed with which the material is finished, the reduced attendance necessary, and to the perfection of the finished product.

Sand Riddling Machine Breaks Lumps

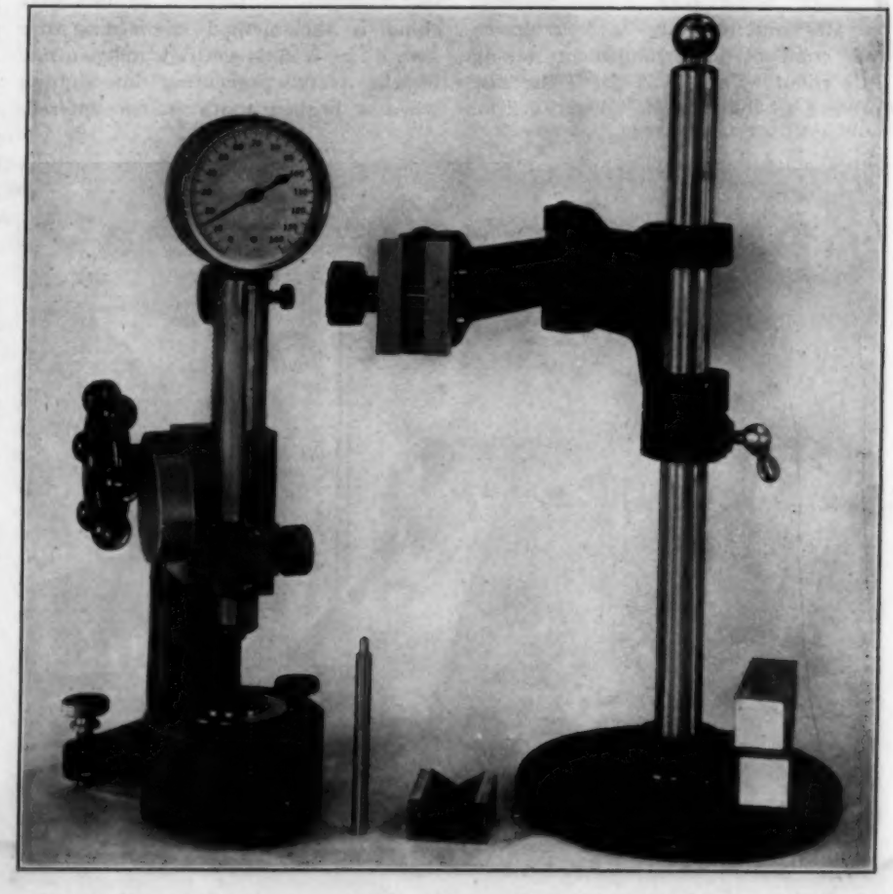
Adapted either for electric or pneumatic drive the riddle shown in the accompanying illustration has been placed on the market by the Buckeye Products Co., 919-929 West Fifth street, Cincinnati. The distinctive feature of this device is a floating perforated disk which the inventor states will effectually break all lumps of hard sand and thus effect a material saving in the amount of residue destined for the dump. The riddle is supported on roller bearings resting on two 1½ x ½-inch steel bars which extend far enough in front to serve as handles when moving the riddle from one place to another. The roller bearings under the riddle remain in a horizontal position at all times and minimize friction. The machine is equipped with a ¼-horsepower motor either for alternating or direct current. If required the riddle may be supplied in connection with a pneumatic motor. When equipped in the latter manner it is stated that it will operate satisfactorily at any ordinary air pressure over 20 pounds. At 70 pounds pressure it is claimed that the air consumption will not amount to over 2 cubic feet per minute. Among other meritorious features pointed out by the inventor are that it is portable and readily may be placed where desired; it requires no supporting accessories since it rests directly on the floor; sand may be shoveled into the riddle from any position.

Places Recording Device on Scleroscope

A new model of the scleroscope which is now provided with permanent indicating mechanism in the form of a pointer hand and graduated dial has been put on the market by the Shore Instrument & Mfg. Co., Jamaica, N. Y.

The hammer employed differs from the earlier models in which the height of the rebound of the hammer is measured on a vertical graduated scale, in that it is longer, heavier and drops and rebounds a comparatively shorter distance. The mechanism consists in the main of a sensitive one-way ball clutch and pilot sleeve which normally holds the hammer at its upper starting position. When released, the pilot sleeve falls with the hammer, with the result that the slightest rebound is instantly fixed by the one-way clutch.

Following this cycle the clutch assembly is raised to its starting position, carrying the hammer with it in its now superposed position, due to the percentage of rebound recorded. Simultaneously the hammer arriving at its upper, or starting position, engages and actuates a rack and pinion and hair spring dial mechanism which in turn indicates the amount of rebound of the hammer and, therefore, the hardness of the specimen. The hardness values shown by this instrument agree with those shown on the vertical scale instrument the manufacture of which is continued for those who desire it.



THE RECORDING DIAL IS SHOWN ON THE SCLEROSCOPE WHICH STANDS AT THE LEFT

Pig Iron Men

Frolic at Iron Mongers Dinner at Philadelphia—A Unique Organization

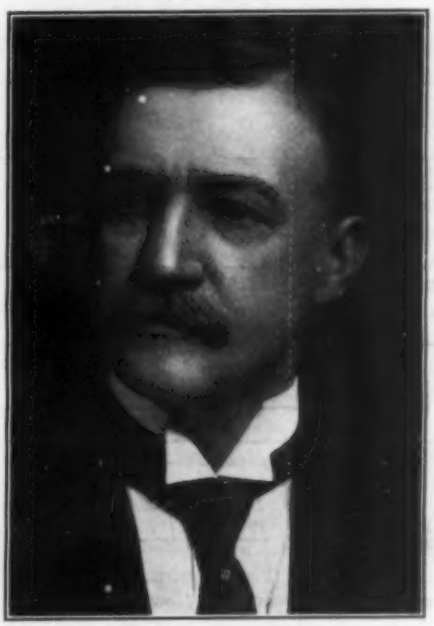
About 50 members of the pig iron fraternity in the Philadelphia district attended the annual banquet of the Iron Mongers association, Tubal Cain chapter, at the Adelphia hotel, that city, Feb. 10. The principal event was the awarding of the so-called Meanley grand challenge cup to the best scorer in the golf tournaments which the association has conducted during the past year. The cup, which went to Walter B. Kennedy, district sales agent of the Bethlehem Steel Co. at Philadelphia, was donated by M. Brooke Meanly, president of the Jones Hollow Ware Co., Baltimore. It is of cast iron, with a gold name plate. It was cast from a heat containing a pig of iron from practically every eastern blast furnace, and from several foreign stacks.

Robert C. Lea presided over the banquet. The speakers included F. L. Ballard, W. W. Hearne, Percival Johnson, W. B. Kennedy, M. Brooke Meanley, Frank W. Jones, H. B. Spackman, John R. Sproul, W. W. Lukens and Richard Peters Jr.

Perhaps no more unique institution exists in the entire iron and steel industry today than this Iron Mongers association. It is unlikely such an organization could have been originated and nurtured to the same extent as in the friendly atmosphere of Philadelphia. The Iron Mongers association is an outgrowth of the good spirit which always has prevailed among the pig iron sellers of that city. It proceeded from a luncheon group including Walter A. Barrows 3rd, Robert C. Lea, Roland Lea, Richard Peters Jr., George Pilling, Harry Hallman, W. W. Hearne and others. This luncheon group early in 1922 decided to hold a series of golf tournaments and later to organize a little club. As a result of the Iron Mongers association, Tubal Cain chapter came into existence. Throughout 1922 golf tournaments were held at regular intervals in and around Philadelphia. Each tournament was followed by a dinner. The affairs were tremendously successfull both from the golfing and social standpoints and those who attended them included practically everyone of rank in the Philadelphia pig iron market.

The Iron Mongers association was organized with a good deal of eclat in the selection of officers. On the honorary board of governors, W. A. Barrows Jr., Sir Albert Broden, Leonard Peckitt, W. S. Piling and Chas. M. Smith are listed as serving for two years and Alva C. Dinkey, Wm. H. Donner, E. H. Gary, J. Leonard Replogle and Chas. M. Schwab four years. Officers elected were: Iron master, Robert C. Lea; head founder, Richard Peters Jr.; keeper, H. F. Hallman; first helper, Jasper Penny, paymaster, W. S. Barrows 3rd; clerk, Geo. P. Pilling.

Pig iron men from other cities were invited to attend some of the tournaments in Philadelphia and from these visits there developed the idea of organizing similar bodies in the pig iron trade in other districts. E. Arthur Tutein, engineered such a move in Boston and organized the Iron Mongers association, Puritan chapter. The Philadelphia originators of the Iron



E. B. LEIGH

Mongers idea thereupon advised the Boston group that it could not function without first obtaining a charter from the parent body. Frederic Lyman Ballard, an attorney who has been prominently connected with pig iron and steel litigation in the Philadelphia district drew up a legal form declaring that:

"The Tubal Cain chapter of the Iron Mongers association is the one true body corporate possessing power and privilege to function in the name of the Iron Mongers association aforesaid, and to grant to such persons as may to it seem meet charters and investitures to maintain additional chapters of the said association throughout the whole world, which charters and investitures are the only lawful authority for any and all acts whatsoever in the name of the said association had or done and without which all ceremonies, rites, convocations, collations and liquidations in the name of the said association are null, void and of no effect."

It is understood that while the Boston group has not yet applied for a charter, this document impressed it sufficiently to decide upon making such an application.

Railway Equipment Maker Celebrates Anniversary

Chicago, Feb. 13.—A period of 30 years of business existence by the Chicago Railway Equipment Co. was signalized Feb. 6 at the annual banquet of the company at the Union League club. Three persons connected with the company from its inception were present, E. B. Leigh, president, E. T. Walker, secretary and treasurer, and Miss May Huntoon, private secretary to the president. Tokens of appreciation were presented Mr. Walker and Miss Huntoon by Mr. Leigh and A. C. Moore, vice president. Mr. Leigh was the recipient of an appreciation from the directors and staff, setting forth their esteem and affection.

A number of friends of the company and of Mr. Leigh from other cities attended the dinner and paid tribute to the successful development and administration of the business. Three generations of Mr. Leigh's family were present, Mr. Leigh, his son, Edwin Leigh, manager of the Marion plant and Norris Leigh, a grandson of 15 years.

In the arrangement of the tables, three decades were represented. The table was in the form of a dumbbell, with a miniature railroad bridge supported by four piers representing the four plants of the company, connecting one round table with the other. On one table was a ship symbolizing the National Hollow Brake Beam Co., predecessor of the present company, and on the other a second ship representing the present corporation.

The three tracks of the bridge contained ten cars each. These cars were representative of the types used in each of the past three decades. Each decade was marked by block signal sections, the first by green lights for caution, the second by red for danger and the third by white lights for clear track.

E. B. Leigh, president of the company, addressed the assemblage and summarized the history and success of the company.

The circuit court at Fond du Lac, Wis., has issued an order directing that a public sale be held May 12, 1923, of the entire property of the defunct Barton Axle Co. of Barton, Wis. No bid of less than $80,000, or unaccompanied by a deposit of at least $25,000, is to be considered. The property includes as one parcel three acres with factory buildings and equipment and a tract of 27 acres with miscellaneous buildings. Henry J. Diressel, Barton, is receiver.

Late News of the Societies

Notes on Past and Coming Meetings of National and Local Trade and Technical Organizations

LONDON, Feb. 5.—Preliminary plans are being made in London for active co-operation between the Institution of British Foundrymen and the American Foundrymen's association in connection with the international foundrymen's congress and exhibition which will be held in Paris in September under the auspices of the French Foundrymen's association. It is expected now that a delegation of American foundrymen will arrive in England late in August. After spending a few days in Great Britain this delegation will join the representatives of the Institution of British Foundrymen in London and proceed with them to Paris just prior to the opening of the French convention which starts Sept. 12. The American delegation will be received officially in Great Britain by various branches of the Institution of British Foundrymen and by other prominent British metallurgical societies.

A subcommittee on arrangements has been appointed of which Oliver Stubbs, president-elect of the Institution of British Foundrymen, is chairman. The other members of this committee include Col. W. F. Cheesewright, V. C. Faulkner, and H. Cole Estep. A London committee of entertainment for the American foundrymen is also in process of formation. It is probable that after the Paris convention arrangements will be made for an Anglo-American party to visit certain important industrial and historical districts in eastern France, Luxemburg and Belgium.

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Speaks on Metallurgy

Dr. Walter Rosenhain, F. R. S. the eminent English scientist, gave a series of two lectures Monday and Tuesday evenings, Feb. 12 and 13 at Carnegie Institute of Technology, Pittsburgh on the general subject of metallurgy.

Dr. Rosenhain arrived in New York on the OLYMPIC late last week, and his Pittsburgh engagement was the first of a speaking tour he now is making through the East. He is director of the national physical laboratory at Teddington, England, a fellow in the Royal society, and one of the leading authorities in research in metallurgy, glass, and pottery industries.

The various scientific and engineering societies of the Pittsburgh district were invited and the lectures being open to the public capacity audiences attended both evenings.

* * *

Implement Dealers Meet

Last week the New England Implement Dealers association held its annual convention at Hotel Westminster, Boston. The chief items considered dealt with retail price fixing and protection against unfair business methods. The convention went on record as favoring the retail delivery of farm implements. It was pointed out that owing to the advent of the automobile, farmers have discarded their wagons and heavy drays and now have not the means of transporting farm machinery to their premises. Most members of the association in attendance look forward to a healthy condition in the implement field during 1923.

* * *

Discuss Apprentice Problem

The urgency of recruiting more apprentices to the foundry trade was stressed at the mid-winter meeting of the Newark Foundrymen's association at the Downtown club, Newark, N. J., Feb. 8. At present, it was said, the ratio of apprentices to the number of molders in the foundries of that district was less than one to 20. Leading speakers were A. Trowbridge, of the National Industrial Conference board, New York; Mr. Fuller, of the Seymour vocational school, Newark, N. J.; and H. M. Lane, industrial engineer, Detroit. While no definite program was formulated, a committee was appointed to work out a publicity campaign, this being regarded as highly important, and endeavor to inaugurate a plan of co-operative training by the different foundries, which at the same time, if possible, would link up with whatever program might be proposed by the vocational training schools of the city.

* * *

Safety Congress To Meet

The National Safety council has accepted the invitation of the Buffalo chamber of commerce to hold the 1923 national safety congress at Buffalo, Oct. 1 to 5, according to announcement by W. H. Cameron, managing director, for the executive committee of the council. The convention will be held in the new Buffalo Statler hotel which will be completed in April. Buffalo, noted for its iron, steel, automotive, chemical, coap, dye and other products, was one of the pioneer districts in the development of industrial safety and has more recently achieved noteworthy accomplishments in curbing public accidents. These facts and the centralized industrial position of the city led to its selection as the meeting place for 1923. Buffalo business and industrial leaders have organized a Niagara Frontier safety convention committee to arrange details and cooperate with National Safety council officials in preparing for the congress.

Convention Calendar

Feb. 12-17—American Ceramic society, annual meeting, Pittsburgh. R. C. Purdy, Ohio State university, Columbus, O., is secretary.

Feb. 14-16—American Institute of Electrical Engineers. Mid-winter convention, New York. F. L. Hutchinson, 29 West Thirty-ninth street, New York, is secretary.

Feb. 19-21—American Institute of Mining and Metallurgical Engineers. Annual meeting in Engineering Societies building, New York. F. F. Shrapless, 29 West Thirty-ninth street, New York, is secretary.

April 3-7—American Chemical society. Spring meeting New Haven, Conn. L. Parsons, P. O. Box 1515, Washington, is secretary.

April 18-20—Society of Industrial Engineers. Spring convention in Cincinnati. The headquarters of the society are at 327 S. La Salle street, Chicago.

April 19-21—American Gear Manufacturers' association, annual meeting, Hotel Cleveland, Cleveland. T. W. Owen, 2443 Prospect avenue, Cleveland, is secretary.

April 25-27—National Foreign Trade Council. Annual convention in New Orleans. O. K. Davis, 1 Hanover square, New York, is secretary.

April 28-May 3—American Foundrymen's association. Annual convention and exhibition at Public Hall, Cleveland. C. E. Hoyt, 140 South Dearborn street, Chicago, is secretary.

May 3-5—American Electrochemical society, semiannual meeting, Hotel Commodore, New York. Colin G. Fink, 327 South La Salle street, Chicago, is secretary.

May 7-9—American Association of Engineers. Annual convention at Norfolk, Va. C. E. Drayer, 63 E. Adams street, Chicago, is secretary.

May 17-19—National Supply and Machinery Dealers association; Southern Supply and Machinery Dealers association; and American Supply and Machinery Dealers association, triple convention, Cincinnati. F. D. Mitchell, 1819 Broadway, New York, is secretary.

June 25-26—American Society for Testing Materials, annual meeting at the Chalfonte-Haddon hall hotel, Atlantic City, N. J. C. L. Warwick, 1315 Spruce street, Philadelphia, is secretary.

Republic Earnings Make Sharp Recovery

Marked improvement in the iron and steel markets in 1922 is strikingly reflected in the report of earnings for the Republic Iron & Steel Co., Youngstown. Net profits for the period were $418,312, after taxes, interest and depreciation. This compares with a deficit of $5,665,242 in 1921.

The upturn in earnings came in the last quarter of the year. The net for the closing three months was $1,182,689. In the third quarter there was a loss of $138,675. The net for common stock in the fourth quarter was $745,189. The comparative income statement for the year follows:

	1922	1921
Net earnings	$2,189,408	$522,528
Other income	331,454	173,482
Total income	$2,520,862	$685,010
Depreciation	1,002,373	1,026,874
Idle plant expenses	.....	1,494,130
Mine expenses	222,810	159,797
Liberty bond loss	.....	383,558
Investment reduction	.....	2,478,918
Interest	877,367	806,975
Net profits	$418,312	*$5,665,242
Preferred dividend	.....	1,750,000
Common dividend	.....	450,000
Surplus	$418,312	*$7,805,242
Previous surplus	29,576,320	37,441,571
Total surplus	$29,994,641	$29,576,329

*Loss.

Unfilled orders of the company at the close of 1922 totaled 219,948 tons, of which 162,025 tons were for finished and semifinished products and 57,923 tons of pig iron.

Current assets of the company on Dec. 31, 1922, were $25,205,395 and current liabilities $9,048,624, leaving a working capital of $16,156,771, compared with $15,180,064 at the end of 1921. Inventories were $13,631,185, against $15,231,804.

Gross business last year amounted to $39,123,708, contrasted with $20,756,748 in 1921. There was spent for additions last year $357,095 and the total expenditures of this nature since the company's organization have been $48,953,744.

Pig iron production was 632,498 gross tons against 301,080 in 1921 and 972,188 in 1920. Steel production—bessemer and open hearth—was 731,548 tons against 329,778 in 1921 and 984,953 tons in 1920.

Shipments for the year totaled 901,760 tons against 376,632 tons the year previous and 1.085,707 tons two years previous. Of the 1922 shipments 452,778 tons were finished product, 203,499 tons semifinished, and 245,483 tons pig iron.

Coal production was 1,555,313 tons and coke 606,191 tons, of which 402,395 were by-product and 203,796 beehive.

Ore mined during the year totaled 969,669 tons, against 299,319 tons in 1921 and 1,677,699 tons in 1920. Iron ore reserves at the close of 1922 were estimated at 125,733,829 tons, against 126,777,675 tons a year earlier.

Coal reserves on Dec. 31 were 130,882,288 tons, compared with 132,437,601 tons at the end of 1921.

The average number of men employed during the year was 8826 compared with 5623 in 1921 and 13,230 in 1920. Total expenditures for labor were $13,108,275. Average wage per man was $1485, compared with $1714 in 1921, $2190 in 1920 and $979 in 1916.

Midvale Shows Good Gain in Last Quarter

A deficit of $4,211 after charges, taxes, depreciation and depletion is reported by Midvale Steel & Ordnance Co., for the fourth quarter of 1922. In addition the company set up an estimated loss in the dissolution of the Consolidated Steel Corp., of which the company was a member. This made the total deficit for the quarter $274,211.

The actual operating results of the December period show a marked improvement over the preceding three months. The deficit for the September quarter was $760,864 and in the last quarter of 1921 there was a loss of $1,379,782.

Based on the previous quarterly statements the company had a loss up through Sept. 30 last of $3,348,801. This was increased to $3,623,012 for the full year, as a result of operations in the last quarter, compared with a total deficit in 1921 of $6,313,513.

The deficit for the last quarter compared a loss of $1,152,827 for the first quarter and $1,435,110 for the three months ended June 30.

Torbensen Sales Grow

The Torbensen Axle Co., Cleveland, reports an increase in shipments in 1922 of $500,000 over the preceding year. The net profit for the period was $204,656. During the year liabilities were reduced $776,260 and current assets increased $124,163. Current assets total $896,500, including inventories of $462,189. The company has expanded its capacity to make passenger car axles in addition to axles for trucks.

The capitalization of the Gold Medal Camp Furniture Co. of Racine, Wis., has been increased from $200,000 to $600,000 by way of converting increased value of assets into stock and to provide for future enlargement. The concern makes metal and wood campers' furniture and fixtures.

Stocks Sold

Ahead in Coke By-Products Market. Plant Operations Increasing

New York, Feb. 12.—With practically all the leading producers of naphthalene sold ahead for the next 60 days, quotations largely are nominal. One seller in this city is asking as high as 8.50c on flakes and 9.50c on balls, plant, but has taken this measure more to discourage buyers than with any idea of consummating many sales at these higher prices.

Other coal tar by-products are in increasing demand this applying in particular to light oil distillates and sulphate of ammonia. With regard to this latter product the improvement is principally in buying by the Orient.

Prices, while stronger, are unchanged. Sulphate of ammonia for domestic account is still holding around $3.15 to $3.20, plant, and for export $3.55 to $3.60, port in double bags. Pure benzol is quoted at 27 cents in tanks and 33 cents in drums; toluol, 30 cents in tanks and 35 cents in drums; solvent naphtha, 27 cents in tanks and 32 cents in drums; pure xylol, 30 cents in tanks and 35 cents in drums; and commercial xylol, 26 cents in tanks and 34 cents in drums.

Operations at the coal tar by-products plants, reflecting the situation in the output of iron and steel are at an exceedingly high rate, being over 80 per cent of capacity at most plants. This rate would be even further increased, it is said, were it not for the shortage of labor.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plants in Tank Lots

Pure benzol	$0.30
Toluol	0.30
Solvent naphtha	0.27
Commercial xylol	0.29

Per Pound at Producres' Plants

Phenol	$0.24
Naphthalene flake	nominal
Napthalene balls	nominal

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	$3.15 to $3.20

Contract

Pure benzol	$0.30
Toluol	0.30
Solvent naphtha	0.27
Commercial xylol	0.29

Per Pound at Producers' Plants

Phenol	$0.24
Naphthalene, flake	nominal
Napthalene balls	nominal

The Liberty Motor Car Co., Detroit, has been placed in charge of a receiver by the federal district court on application of the Parish Mfg. Co., Reading, Pa., which says it holds claims of $5,107.

Ore Shipments for 1922 Compiled

Official Record Prepared by Iron Trade Review Shows 43,990,096 Tons Forwarded from Lake Superior Iron Mines—Gain of 93 Per Cent Over Previous Year—Ten New Mines—Ford's Imperial, 73,083 Tons

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BY A. J. HAIN

IRON TRADE REVIEW'S compilation of ore shipments from the Lake Superior district shows a total of 43,990,096 tons for 1922. This is an increase of 21,191,747 tons, or 93 per cent, over the figure for 1921.

The largest shipment of iron ore from the Lake Superior district in any year was that in 1916—66,658,466 tons. The shipment in 1922 was 22,668,370 tons less than in 1916, a decrease of 34 per cent.

Shipments in 1921 and 1922 combined equal 66,788,445 tons, only 129,979 tons more than was forwarded to consumers in the record year 1916. The total of shipments in the last 10 years, averaged, gives a yearly tonnage of 49,962,790 tons. The shipment in 1922—43,990,096—is about 12 per cent below the average for the 10-year period.

From the Lake Superior district there now has been shipped 1,073,745,934 tons of iron ore. The Mesabi range has contributed 602,241,998 tons; Menominee range 132,699,603 tons; Marquette range 140,054,903; Gogebic range 134,281,552; Cuyuna range 15,837,852; Vermillion range 46,267,725, and Mayville-Baraboo 2,362,301 tons.

The Oliver Iron Mining Co., subsidiary of the United States Steel Corp., in 1922 forwarded to consuming points 19,726,047 tons of ore. This is 44.84 per cent of all the ore shipped in the year from the district. In 1921 the Oliver company forwarded 14,056,759 tons, or 61.65 per cent of the total. Its shipments, 1909 to 1922, inclusive, amount to 314,455,299 tons. The Oliver company's yearly shipments were as follows:

Year	Gross tons	Percentage
1922	19,726,047	44.84
1921	14,056,759	61.65
1920	24,936,073	41.28
1919	22,065,148	45.20
1918	26,178,782	41.66
1917	28,571,977	44.34
1916	31,673,131	47.52
1915	22,518,613	47.63
1914	16,039,654	49.01
1913	24,502,244	49.06
1912	23,845,363	49.46
1911	17,282,499	52.70
1910	21,661,143	40.86
1909	21,397,866	50.36
Total	314,455,299	

Some of the Steel corporation's mines continued in 1922 their records for shipping the largest tonnages. From its Canisteo mine, there were 1,120,776 tons; Hull-Rust 4,474,326 tons; Missabe Mountain 3,174,440 tons, and Spruce 1,218,983 tons. The only other mine on the Mesabi range which last year shipped more than 1,000,000 tons, was the Mahoning, of the Mahoning Ore & Steel Co., in which the Bethlehem Steel Corp. has acquired one-half interest. The Mahoning's tonnage was 1,024,696. The five mines named shipped 11,013,221 tons, or about 25 per cent of the total of all shipments in 1922. The tonnage exceeds the total of 10,298,129 forwarded from the 61 mines on the Menominee and Gogebic ranges that were in operation in 1922. The Menominee and Gogebic ranges, in order, were the largest shippers, next after the Mesabi.

No mine of the Menominee, Marquette or Vermillion ranges exceeded a shipment of 1,000,000 last year. On the Gogebic range the Norrie group, classified as one mine, of the Oliver company, shipped 1,385,241 tons.

Shipments from the Great Northern iron ore properties in 1922 amounted to 6,826,331 tons. A total of 4,356,918 tons was shipped from the mines in which the Bethlehem Steel Corp. recently acquired an interest. Sixteen mines are represented in the tonnage. Bethlehem received the bulk of its ore requirements last year from its eastern and foreign properties. Many of the Lake Superior mines in which it has purchased an interest are capable of making much larger shipments than were made in 1922. The Mesabi Iron Co., in which Bethlehem has a substantial interest, began shipping from its sintering plant at Babbitt, Minn. The total was 19,379 tons, but 8703 tons of the product was held in upper lake docks when the shipping season closed, and therefore is not included in IRON TRADE REVIEW'S record for 1922.

The accompanying statistics include iron ore shipped in the year designated either by lake or all-rail to lower lake docks or points of consumption. Ore held in dock at the close of lake navigation, that the shipper was unable to move to destination, is withheld for inclusion in the record for the following year when it is shipped out. The purpose has been to show tonnage actually shipped to consumers.

Iron ore lost in transit from mines to railroads or docks also is excluded from the compilations, wherever there is an official record of such loss. This method was adopted at the outset by IRON TRADE REVIEW, and has been followed many years in the preparation of its tables and charts relating to shipments of ore from the Lake Superior district. These tables and charts are the basis of practically all statistical information on the subject. In 1922 the tonnage lost in transit was around 1000 tons. The Oliver company's loss was 452 tons, in various small lots. The company's losses do not appear in its figures as given in these columns or in IRON TRADE REVIEW'S special ore chart.

Figures are determined from reports submitted by owners, operators, sales representatives and railroad companies; comparisons made and inaccuracies corrected, and the record is carried forward on the same basis as that on which it was originated by IRON TRADE REVIEW. Some agencies beginning recently the compilation of shipments have adopted IRON TRADE REVIEW'S figures for former years excluding ore lost in transit, but in extending them have included ore lost. Some confusion also is apparent in the reports as to the amounts held in dock, and the years in which tonnages actually were shipped, as well as in the division of ore produced from ad-

Comparative Shipments by Ranges, 1922-1921

	1922	1921	Increase in 1922
Mesabi	28,055,394	16,350,696	11,704,698
Menominee	4,078,519	1,584,404	2,494,115
Marquette	2,817,390	1,116,468	1,700,922
Gogebic	6,219,610	2,336,493	3,883,117
Cuyuna	1,497,615	488,562	1,009,053
Vermillion	1,211,467	869,313	342,154
Mayville-Baraboo	110,101	52,413	57,688
Totals	43,990,096	22,798,349	21,191,747
By lake	42,613,184	22,300,726	20,312,458
By rail	1,376,912	497,623	879,289

Official Record of Shipments from Lake Superior District in 1922 and 1921, Gross Tons

MESABI RANGE

	1922	1921		1922	1921		1922	1921		1922	1921
Aad	8,286	11,094	Fault	38,707	.....	Leonidas	645,513	449,881	Sliver	31,549	.....
Adams	468,237	102,293	Fay	223,070	.....	Lincoln	76,225	43,738	Smith	50,175	.....
Albany	206,750	45,490	Fayal	330,186	278,974	Mace No. 1	.....	6,305	South Agnew	7,978	.....
Alexandria	203,170	68	Fowler	20,560	10,655	Mace No. 2	.....	13,403	South Judd	171,034	.....
Arcturus	173,297	6,002	Genoa	176,484	128,128	Madrid	13,977	6,905	Spruce	1,218,983	815,309
Belgrade	102,980	5,971	Glen	447,608	51,161	Mahoning	1,024,696	303,019	St. James	636,329	.....
Bennett	605,723	392,695	Harold	247,533	150,425	Majorca	100,816	.....	Stevenson	22,197	59,524
Billings	107,072	.....	Harrison	23,382	.....	Mariska	30,263	.....	Susquehanna	473,802	.....
Biwabik	265,662	139,978	Hartley - Burt-Palmer	.....	97,371	Meadow	39,537	9,573	Sweeney	874,336	226,732
Boeing	250,474	.....	Hawkins	311,216	349,823	Mesabi Iron Co.	10,676	.....	Thorne	121,234	.....
Bradford	2,775	.....	Hill Annex	758,162	26,516	Miller	349,447	303,612	Tioga	75,006	.....
Burns	21,703	16,990	Hill-Trumbull	350,015	299,900	Missabe Mt.	3,174,440	1,816,178	Tyler	1,059	.....
*Burt-Pool-Day	118,508	223,316	Hobart	229,088	207,941	Mississippi	36,578	.....	Uno North	20,811	37,121
Canisteo	1,120,776	1,128,925	Holman	622,207	378,567	Mohawk	112,699	1,672	Uno South	39,637	79,414
Chester	.....	163,985	Hull-Rust	4,474,326	3,719,256	Morris	525,581	126,218	Utica	201,800	144,593
Chisholm	376,124	278,117	Itasca	22,737	103,772	Morton	61,959	.....	Wacootah	59,482	46,398
Cincinnati	37,731	.....	Julia	10,566	.....	No. Harrison	497,277	198,452	Wanless	168,295	119,215
Clark	141,750	79,491	Kerr	559,017	547,043	Patrick	310,223	133,663	Warren	101,100	252
Corsica	286,262	183,857	Kevin	42,450	60,802	Philbin	7,085	122,679	Webb	129,058	.....
Crosby	58,153	.....	Kinney	292,893	.....	Pilot	87,898	12,411	Wellington	61,560	58,976
Cyprus	2,914	.....	Lamberton	99,853	34,319	Quinn	5,524	99,250	Wisstar	27,095	33,188
Danube	288,933	.....	La Rue	.....	135,214	Sargent	55,604	54,248	Woodbridge	51,528	75,400
Dean	398,547	261,703	Laura	142,120	62,683	Sellers	96,009	280,850	York	86,558	76,542
Duncan	5,070	5,167	Leetonia	147,694	170,788	Shenango	187,164	.....	Total	28,055,394	16,350,696
Dunwoody	700,623	488,485	Leonard	400,068	194,633	Shiras	.....	37,730			
Elba	54,135	16,649									

*Formerly Burt.

MENOMINEE RANGE

	1922	1921		1922	1921		1922	1921		1922	1921
Aragon	275,464	146,473	Chicagon	48,758	83	Monongahela	114,799	12,468	Tully	62,129	72,342
Balkan	84,952	94,523	Davidson	166,372	42,487	Munro	35,263	.....	Wapama	.....	40,666
Baltic	138,431	76,878	Delta	.....	42,979	Odgers	55,459	21,561	Warner	63,152	1,825
Bates	112,959	35,638	Fogarty	131,359	49,789	Penn Iron Mining Co.	168,164	.....	West Chapin	1,270	.....
Bengal	163,035	60,839	Great Western	59,800	.....	*Porter	120,802	57,450	Zimmerman	33,504	.....
Berkshire	118,871	32,104	Hiawatha	126,869	41,503	Richards	.....	80			
Bristol (Claire)	123,874	13,555	Homer	135,848	92,630	Riverton Group	119,840	115,469	Total	4,078,519	1,584,404
Cardiff	28,982	.....	James	185,632	10,064	Rogers	193,845	.....			
Carpenter	206,837	127,299	Judson	124,802	55,629	Spies	35,123	28,467			
Caspian	158,021	.....	Loretto	88,975	29,953	Tobin	105,344	.....			
Chapin	479,657	279,134	Millie	10,327	2,516						

*Formerly Amasa Porter.

MARQUETTE RANGE

	1922	1921		1922	1921		1922	1921		1922	1921
Adams (American Mining Co.)	16,632	.....	Austin	5,065	.....	Jackson	16,102	4,677	Princeton (Swanzey)	26,145	23,916
American (Sterling)	40,306	10,074	Francis	11,437	16,220	Lake Angeline	36,841	.....	Republic	80,022	5,932
Athens	265,159	46,347	Gardner - Mackinaw	40,180	19,889	Lake Superior	245,694	201,030	Richmond	155,518	84,297
Cleveland-Cliffs Group	232,801	104,160	Gwynn	26,436	64,515	Maas	11,997	68,228	Rolling Mill	141,817	28,666
			Holmes	262,251	41,944	Maitland	13,593	.....	Stephenson	202,523	77,077
			Imperial	73,083	.....	Mary-Charlotte	172,261	69,435			
			Isabella	109,731	.....	Morris-Lloyd	293,916	65,849	Total	2,817,390	1,116,468
						Negaunee	337,880	184,222			

GOGEBIC RANGE

	1922	1921		1922	1921		1922	1921		1922	1921
Anvil	30,558	2,444	Davis (Wis.)	24,124	.....	Norrie Group	1,385,241	1,015,202	Sunday Lake	190,621	59,436
Ashland	76,917	39,311	Eureka	271,840	.....	Ottawa (Odanah)	121,585	18,865	Tilden	222,603	186,564
Asteroid	78,415	373	Geneva	13,432	.....	Palms	472,456	91,722	Townsite	59,929	50,025
Berkshire	1,190	.....	Ironton	267,624	2,509	Plumer	14,434	.....	Wakefield	430,136	.....
Brotherton	69,033	75,351	Kewcenaw	133,000	10,391	Plymouth	607,854	428,112	Yale (West Colby)	263,667	11,395
Cary	158,325	47,808	Minnewawa	6,660	.....	Puritan	69,695	131,198			
Castile	24,889	.....	Montreal	382,415	.....	Royal	54,799	17,727	Total	6,219,610	2,336,493
Colby	.....	48,658	Newport	788,168	99,404						

CUYUNA RANGE

	1922	1921		1922	1921
Armour No. 1	9,359	.....	Meacham	14,361	35,145
Armour No. 2	319,255	214,040	*Milford	871	.....
Bonnie-Belle	24,878	.....	Pennington	101,767	.....
Croft	28	29,726	Portsmouth	163,927	.....
Hill Crest	104,336	116,241	Sagamore	197,450	.....
Huntington	40,591	.....	State Lease	31,808	.....
Ironton	.....	10,208			
Kennedy	144,294	35,549	Total	1,497,615	488,562
Mahnomen	199,218	41,057			
Maroco	145,472	6,596			

*Formerly Ida Mae.

VERMILLION RANGE

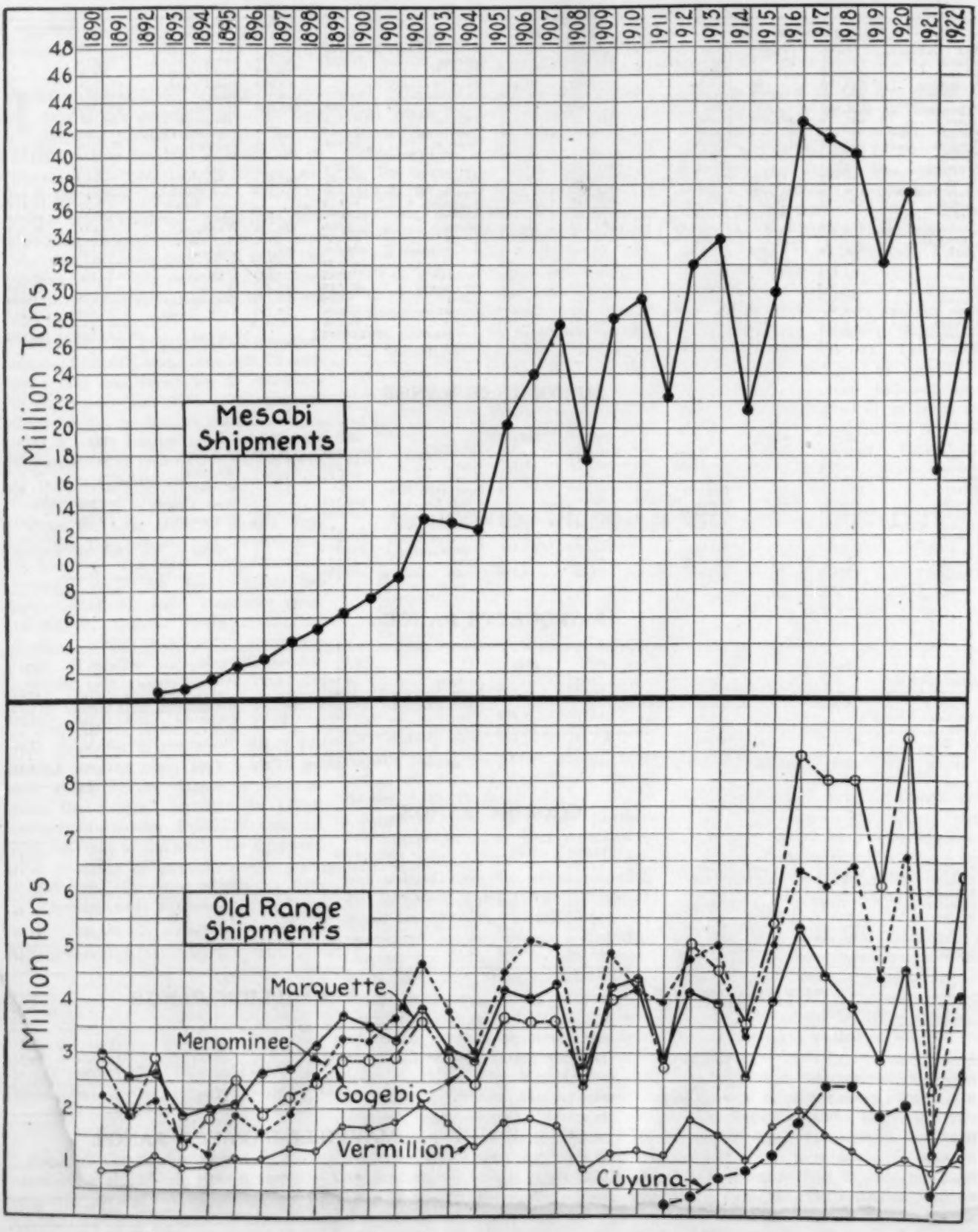
	1922	1921		1922	1921
Chandler	44,293	.....	Soudan	131,479	78,386
Pioneer	634,085	509,392	Zenith	252,703	149,427
Section 30	97,857	.....			
Sibley	51,050	132,108	Total	1,211,467	869,313

MAYVILLE-BARABOO RANGE

	1922	1921		1922	1921
Cahoon	22,662	.....			
Mayville	87,439	52,413	Total	110,101	52,413

GRAND TOTALS	43,990,096	22,798,349

Graphic Record of Shipments from Lake Superior Iron Ore Ranges in Past Thirty-three Years



joining properties. While the differences due to ore lost in transit is not large, IRON TRADE REVIEW has considered that the correct record of shipments is the one that excludes the ore lost in the upper lakes district while enroute from shipper to consignee. While closely approximating production records, it affords a more accurate record for the trade in general, showing the exact tonnage available for conversion into pig iron.

Shipments were made in 1922 from 10 new mines. One of these, the Boeing, Mesabi range, operated by the Mesaba-Cliffs Iron Co., forwarded 250,474 tons. The Bradford, of the Kingston Mining Co., shipped 2775 tons; the South Judd, Oliver company, 171,034 tons, and the Tyler, Butler Bros., 1059 tons. The only other new mining property on the Mesabi range from which ore was shipped last year was that of the Mesabi Iron Co., as mentioned. This company has not yet named its mine.

Two new mines on the Menominee range started to ship ore, the Cardiff, Wickwire Mining Co., with an initial shipment of 28,982 tons, and the West Chapin, West Chapin Mines Co., with 1270 tons. On the Gogebic range the Berkshire Mining & Development Co. put in operation a plant for concentrating magnetic iron ore and shipped 1190 tons to a maker of charcoal iron. On the Gogebic range, also, the Hayes Mining Co. began shipping from the Minnewawa mine with 66,660 tons. On the Cuyuna range the first shipment of 40,591 tons was made from the Huntington mine by the Whitmarsh Mining Co. The Imperial mine on the Marquette range which formerly was operated by the Cleveland-Cliffs Iron Co. and was sold two years ago to Henry Ford shipped 73,083 tons.

The total number of mines from which shipments were made in 1922 was 201 compared with 149 in 1921. On the Mesabi range the number was 93 in 1922 as against 71 in 1921; on the Menominee 34 compared with 28; Marquette 24 to 18; Gogebic 27 to 19; Cuyuna 15 to 8; Vermillion 6 to 4 and Mayville-Baraboo 2 to 1.

Some of the largest shippers on the Mesaba range were the Adams mine with 468,237 tons; Bennett 605,723 tons; Dunwoody, 700,623 tons; Hill Annex, 758,162; Holman, 622,207; Kerr 559,017; Leonard 400,068; Leonidas 645,513; North Harrison 497,277; St. James 636,329; Susquehanna, 473,802. On Menominee range the largest shipper was the Chapin mine with 479,657 tons. From the Aragon mine, Menominee range, there was shipped 275,464 tons; from the Carpenter 206,837. On the Marquette range the largest shippers were the Athens mine, 265,159 tons; Cleveland-Cliffs group 232,801; Holmes 262,251; Lake Superior 245,694; Morris-Lloyd 293,916; Negaunee 337,880. From the Wakefield mine, Gogebic range, there was shipped 430,136 tons; Palms 472,456; Montreal 382,415; Newport 788,168; Eureka 271,840 tons. The largest shipper on the Cuyuna was the Armour No. 2 mine with 319,255 tons. The largest on the Vermillion was the Pioneer, 634,085 tons.

The following shows the average of shipments from the mines on various ranges for 1922 and 1921:

	1922	1921
Mesabi	301,671	230,291
Gogebic	230,356	122,973
Vermillion	201,911	217,428
Marquette	117,391	62,050
Menominee	119,074	56,621
Cuyuna	99,841	61,070
Lake Superior district	218,856	153,074

The Mesabi range increased its shipment from 16,350,696 tons in 1921 to 28,055,394 tons in 1922; Menominee range increased from 1,584,404 tons to 4,078,519; Marquette from 1,116,468 tons to 2,817,390; Gogebic from 2,336,493 to 6,219,610; Cuyuna 488,562 to 1,497,615; Vermillion 869,313 to 1,211,467, and Mayville-Baraboo from 52,413 to 110,101.

The tonnage shipped from the Lake Superior district by the water route in 1922 was 42,613,184, an increase of 20,312,458 over that in 1921, while the shipment all-rail from mines to consumers in 1922 was 1,376,912, an increase of 879,298. The following gives further comparisons of all-rail tonnages:

1922	1,376,912	1915	953,947
1921	497,623	1914	707,829
1920	1,884,346	1913	876,638
1919	1,369,256	1912	785,769
1918	1,679,440	1911	662,719
1917	1,938,102	1910	813,639
1916	1,924,269	1909	903,270

On the Canadian side, the Algoma Steel Corp., shipped in 1922 268 tons from the Magpie mine compared with 52,442 tons in 1921, while Moose Mountain Ltd. increased its shipment to 14,188 tons in 1922 from 79 tons in 1921.

The record of shipments from the Lake Superior district in 1922 reflects the general increase in business in the American iron and steel industry. In the Jan. 5, 1922 issue of IRON TRADE REVIEW the prediction was ventured that shipments of iron ore in that year would be 100 per cent greater than in 1921, based on the indicated requirements of blast furnaces. The final record shows that the movement was 93 per cent greater than in 1921, despite the railroad strike that affected practically all industrial operations.

Mine operators are preparing to ship around 55,000,000 tons of ore in 1923. They have been pushing work all winter, on the assumption that 1923 will be a normal year in the ore trade.

Shipments by Port and All Rail, Gross Tons

	1922	1921	1920	1919	1918	1917
Escanaba	4,592,354	1,806,656	7,361,070	4,963,358	6,774,969	7,156,854
Marquette	1,976,220	786,946	3,415,108	2,132,935	3,457,054	3,207,145
Ashland	5,813,207	2,264,705	8,180,852	5,915,383	7,565,608	7,597,841
Two Harbors	5,952,437	3,286,338	9,278,464	6,424,545	8,723,472	9,990,901
Superior	11,234,195	4,994,278	14,812,398	10,919,965	14,068,341	13,978,746
Duluth	13,044,771	9,164,803	15,479,334	16,821,209	20,567,288	20,576,419
Total by lake	42,613,184	22,300,726	58,527,226	47,177,395	61,156,732	62,498,901
Total by rail	1,376,912	497,623	1,884,346	1,369,256	1,679,440	1,938,102
Total	43,990,096	22,798,349	60,411,572	48,546,651	62,836,172	64,437,003

Large Ore Chart

IRON TRADE REVIEW'S complete chart of Lake Superior iron ore shipments from the opening of the various mines to date will soon be ready for distribution. The chart, 28 x 31 inches, is a standard reference work which has proved its value innumerable times to those companies which subscribe for it. It is the original source of information on Lake Superior ore shipments; kept up year after year through painstaking effort. The new chart may be obtained by addressing IRON TRADE REVIEW, *Penton building, Cleveland, and enclosing* $1.

Shipment by Ranges, Gross Tons

	1922	1921	1920	1919	1918	1917
Mesabi	28,055,394	16,350,696	37,149,277	31,997,699	40,396,711	41,445,211
Marquette	2,817,390	1,116,468	4,608,323	2,992,212	4,354,297	4,874,150
Menominee	4,078,519	1,584,404	6,562,106	4,412,868	6,378,698	6,045,750
Gogebic	6,219,610	2,336,493	8,763,332	6,230,839	7,936,701	7,981,684
Vermillion	1,211,467	869,313	1,007,435	929,049	1,192,938	1,530,692
Cuyuna	1,497,615	488,562	2,191,528	1,861,165	2,478,800	2,422,884
Mayville - Baraboo	110,101	52,413	129,571	92,819	98,057	136,632
Total	43,990,096	22,798,349	60,411,572	48,546,651	62,836,172	64,437,003

Price Rise of 30 Years Shown

Bureau of Labor Statistics Compiles Record Since 1890—Metals Index Advances Only 5 Per Cent in Period, While All Commodities Rise 74 Per Cent—Nine Groups in Index

WASHINGTON, Feb. 13.—Wholesale prices of metals and metal products in 1922 were only 5 per cent higher than they were in 1890, while commodity prices in general in 1922 averaged 74 per cent over 1890. Taking 1913 prices as 100, the department of labor credits 1890 with an index number of 116 and 1922 with 122. But the index number for all commodities stands at 81 for 1890 and at 149 for 1922.

Nine principal groups enter into the "all commodity figure." These are farm products, foods, cloths and clothing, fuel and lighting, metals and metal products, building materials, chemicals, house-furnishings and miscellaneous. The rise in fuel and lighting from 1890 to 1922 is from 62 to 218, in building materials from 82 to 168, in farm products from 70 to 133, in foods from 86 to 138, in chemicals from 91 to 124, in house furnishings from 88 to 176, in cloths and clothing from 95 to 181, and in miscellaneous from 99 to 117.

Into the metal and metal products classification are placed iron ore, pig iron, ferromanganese, spiegeleisen, bar iron, nails, cast pipe, reinforcing bars, skelp, billets, merchant bars, sheets, rails, structural shapes, tin and terne plate, wire, aluminum, copper ingots, sheets and wire, pig lead, lead pipe, quicksilver, silver, pig tin, and zinc slabs and sheets. In the 32-year period from 1890 to 1922, always with 1913 as 100, the low point was 72, registered in each of 1894, 1897 and 1898, and the high point 231, reached in 1917. The 1922 index of 122 was imperceptibly over half of the high of 231.

In the accompanying table are given the yearly indexes for all nine of the commodities grouped together, and for metals and metal products, fuel and lighting, building materials and farm products separately.

Wholesale Price Index

1913 Equals 100

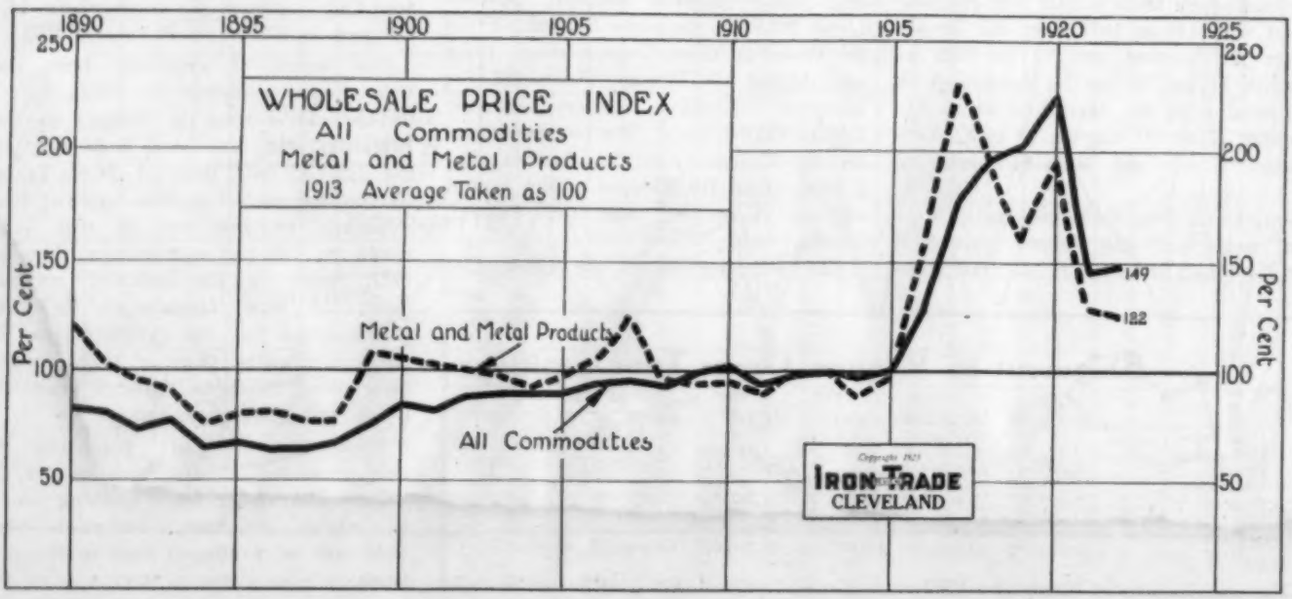
Year.	All commodities.	Metals and metal products.	Fuel and lighting.	Building materials.	Farm products.
1890	81	116	62	82	70
1891	80	102	60	78	65
1892	75	92	57	74	68
1893	77	85	58	73	71
1894	69	72	56	70	61
1895	70	77	66	68	61
1896	67	78	65	68	55
1897	67	72	55	66	59
1898	70	72	56	70	63
1899	75	110	67	77	64
1900	81	108	76	81	70
1901	79	103	73	78	74
1902	84	100	84	80	81
1903	86	99	98	82	77
1904	86	88	87	79	81
1905	86	98	81	85	79
1906	89	113	85	95	80
1907	94	121	89	103	87
1908	90	95	88	92	86
1909	97	93	84	95	97
1910	101	94	78	98	103
1911	93	89	76	98	93
1912	99	99	84	99	101
1913	100	100	100	100	100
1914	98	85	93	92	103
1915	101	99	88	94	104
1916	127	162	126	120	123
1917	177	231	169	157	190
1918	194	187	170	172	218
1919	206	162	181	201	231
1920	226	192	241	264	218
1921	147	129	199	165	124
1922	149	122	218	168	135

Engine Output Declines

Washington, Feb. 13.—The census bureau reports that in 1921 establishments making water, steam and gas engines of all descriptions numbered 296, a marked decrease from the 348 of 1919 and the 375 of 1914. The value of the products was $199,499,000 in 1921, $464,775,000 in 1919 and $72,121,000 in 1914. Raw materials used cost $111,698,000 in 1921, $217,551,000 in 1919 and $31,460,000 in 1914. Persons employed totaled 43,726 in 1921, 96,286 in 1919 and 36,308 in 1914.

Peru Buys Heavily

Washington, Feb. 13.—Commercial Attache Dunn at Lima has informed the department of commerce that receipts of iron and steel at Peruvian ports are extremely heavy, probably in anticipation of the increases in tariff rates to become effective shortly. One steamer from New York recently brought in 485,570 kilos of iron and steel and 138,000 kilos of wire. Warehouses are stocking up for a long period ahead.



Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields

CLYDE M. CARR has retired as president of Joseph T. Ryerson & Son., Chicago, and has been succeeded by Joseph T. Ryerson. Due to ill health, Mr. Carr has been unable to take an active part in the management of the company for the past two years. However, he will continue a member of the board of directors. He was born in Illinois in 1869 and first became associated with Joseph

CLYDE M. CARR

T. Ryerson & Son in 1890. He had taken an active part in the management and in 1911 was elected president. Mr. Carr has been a leader in civic and industrial circles. He is president of the Orchestral association, director of the Corn National bank, trustee of the Art Institute of Chicago and the Chicago Plan commission, a member of the American Iron and Steel institute, member of the Commercial club and other clubs in New York and Chicago.

Joseph T. Ryerson, the new president and grandson of the original Joseph T. Ryerson, succeeds to the presidency with a background of 22 years experience in the steel business. He was born in Chicago in 1880 and immediately upon graduating from Yale university in 1901, went to work for the American Sheet Steel Co., now the American Sheet & Tin Plate Co., at Vandergrift, Pa. In October, 1902, he started with Joseph T. Ryerson & Son at Chicago, and in 1904 was elected treasurer, becoming vice president in 1911. He is actively interested in the National chamber of commerce and other general industrial work. He is a director of the Peoples Trust & Savings bank of Chicago and the Morris Plan bank of Chicago. He is a member of the American Iron and Steel institute and various clubs and associations in Chicago and New York.

M. G. Dumas of Indiana Harbor, Ind., has accepted a position as metallurgist with the Alloy Electric Steel Castings Co., Youngstown, O.

J. F. Doyle of the Western Automatic Machine Screw Co., Elyria, O., has been elected president of the Hartford Machine Screw Co., Hartford, Conn. Both companies are subsidiaries of the Standard Screw Co.

W. Lee Roueche has been appointed works manager for the McWane Cast Iron Pipe Co., Birmingham, Ala. Mr. Roueche resigned his connection with the Crane Co. at its Birmingham, Ala., plant, effective Feb. 15.

Edwin L. Andrew has been appointed assistant to manager of the department of publicity, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. He entered the employ of the Westinghouse company at East Pittsburgh and has served at the main works and also at the Cincinnati office.

DeWitt E. Yates, formerly president of the Northlite Mfg. Co., Chippewa Falls, Wis., who had retired from business, has accepted an executive position in an engineering capacity with the American Steam Pump Co. which acquired the manufacturing rights of the Northlite company.

J. R. Finkelstein, president of the Hoosier Rolling Mills, H. A. Bereton, secretary-treasurer of the same company and Charles McKeen, a banker of Terre Haute, Ind., have been elected directors of the Consolidated Steel & Iron Corp., Terre Haute, Ind.

Charles M. Schwab, chairman of the Bethlehem Steel Corp. sailed for Europe, Feb. 10. He will celebrate his sixty-first birthday Feb. 18.

W. A. Barrows Jr. and J. E. Rotthaus have resigned as president and assistant to the president, respectively, of the Thomas Iron Co., Hokendauqua, Pa.

JOSEPH T. RYERSON

They have formed the firm of Barrows & Rotthaus, Widener building, Philadelphia, pig iron, coal, coke, etc., to which they will devote all of their time. Mr. Barrows has been president of the Thomas Iron Co. since 1916.

Cloyd M. Chapman has become connected with Dwight P. Robinson & Co., Inc., New York, in the capacity of consulting materials engineer. He has been active in the work of the American Society for Testing Materials and the American Concrete institute. In the future he will represent Dwight P. Robinson & Co. in the committee work of these societies.

James A. Burden, was erroneously reported as having been elected president of the Eastern Steel Co. in the

Jan. 11 and Jan. 18 issues of IRON TRADE REVIEW. He continues as chairman of the board and vice president of the company, and is the company's acting head.

Samuel E. Bool and Frank Armstrong have been admitted to the firm of Pickands, Mather & Co., with headquarters at Cleveland, effective Jan. 1. Mr. Bool is office manager, and Mr. Armstrong, who has been connected with the coal department now is head of that department.

Charles W. Mears, for many years advertising manager of the Winton Co., Cleveland, a former president of the Cleveland Advertising club and dean of the Cleveland Advertising school of the Cleveland School of Sales, has engaged in business as a counselor in marketing with offices in the B. F. Keith building, Cleveland.

Herbert H. Wheeler, for the past 15 years secretary of the Union Mfg. Co., New Britain, Conn., and who for 19 years previously was in the sales department, has been elected treasurer of the company to succeed the late Marcellus L. Bailey. Carl S. Neumann, assistant secretary and for more than 20 years connected with the company, was promoted to the secretaryship.

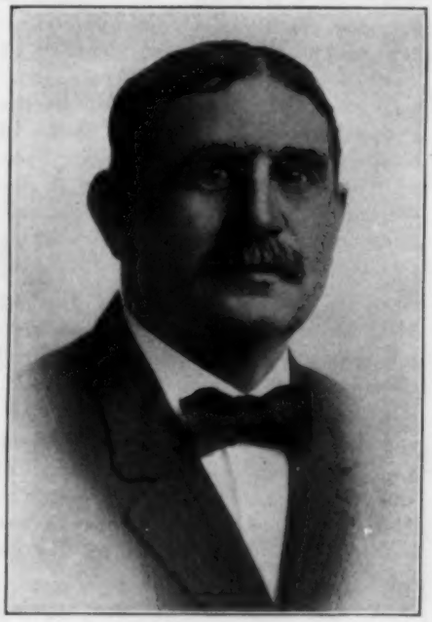
S. E. Marks has been appointed director of traffic and shipping for the Westinghouse Electric & Mfg. Co., and in this position will have general charge of traffic, shipping and packing activities at the East Pittsburgh Pa., East Springfield, Mass., Newark, N. J., Mansfield, O., Cleveland, Derry, Pa., Trafford, Pa., South Bend, Ind., Homewood and Pittsburgh plants.

George S. Rowbotham, Frank A. Russ and James A. Gannon have been placed in charge of designing, estimating and constructing of fabricated steel for the Montgomery Iron & Steel Co., Philadelphia. In addition to these appointments, L. R. Welsh has been placed in charge of similar work on all plain material and A. F. McCarty, of ornamental iron work, fire escapes and vault lights.

George I. Alden, chairman of the directors of the Norton Co., John F. Tinsley, vice president and general manager of the Crompton & Knowles Loom Works, and Charles F. Marble, treasurer of the Curtis & Marble Machine Co., all of Worcester, Mass., have been re-elected president, vice president and clerk, respectively, of the Worcester trade schools. Mr. Marble was re-elected for the sixteenth consecutive time. time.

J. Frank Drake, formerly assistant to the presidents of the Gulf Oil Corp. and the Gulf Refining Co., Pittsburgh, has been elected a director and vice-president of the Standard Steel Car Co. and its subsidiaries. Mr. Drake is a native of New Hampshire, where he was educated at Dartmouth college. He came to Pittsburgh in June, 1919 after receiving his discharge from the ordnance department of the United States army, in which he held a colonel's commission.

Christian W. Lynch, who recently was elected president and director of the Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa., as noted in the Feb. 8 issue, has devoted his entire time during the past 30 years to his numerous business interests.



CHRISTIAN W. LYNCH

He is 60 years of age and a lawyer by profession. He was president and general manager of the Hickok Mfg. Co., Harrisburg, for 10 years, and for a number of years was president and general manager of the Harrisburg Foundry & Machine Co., also of Harrisburg, from which position he resigned some time ago. In his new position he succeeds Alfred K. Barker, resigned.

Ferdinand Jehle has been appointed research engineer for the White Motor Co., Cleveland, having resigned his position as dynamic engineer for the Aluminum Manufacturers Inc., effective Jan. 1. Mr. Jehle was identified with the latter company and its predecessor, the Aluminum Castings Co. for the past six years and during that time contributed extensively to the development of cast aluminum pistons. Previous to that time he was laboratory engineer for the Automobile Club of America at New York, and early in the war had charge of testing competitive designs of air plane engines. Mr. Jehle was graduated from the University of Illinois in 1910.

Roscoe B. Jackson, formerly vice president, treasurer and general manager of the Hudson Motor Car Co., Detroit, was chosen president at the annual meeting of the company held recently. Roy D. Chapin, who has been president for 13 years, was named chairman of the board of directors. Mr. Jackson will continue as general manager. William J. McAneeny, former secretary, was chosen vice president and treasurer; H. T. Coffin and O. H. McCornack were made vice presidents, and A. Barit, secretary.

Norman Russel, who has recently been elected vice president of the New England Foundrymen's association, is president of Albert Russell & Sons Co., Newburyport, Mass., manufacturers of pumps, capstans, and steam and hot water heating systems. Mr. Russell was born in Newburyport in 1884 and graduated from Dartmouth college in 1906. In October of the same year he entered the employment of the firm with which he is now connected and has held this same connection ever since. He has been identified with foundry activities in New England for several years.

Eugene A. Balsley and Albert E. Fisk have opened offices in room 920 at 30 North LaSalle street, Chicago, under the firm style of Balsley & Fisk, consulting engineers. Mr. Balsley was graduated from the University of Wisconsin in 1902 and associated himself immediately with the American Bridge Co., becoming assistant manager of one of its Chicago plants in 1905 and later being manager successively of the Milwaukee plant and the Chicago plant. In 1916 he was made assistant operating manager of the western division and manager of the forge department, resigning Jan. 1 of this year. He is a member of the American Society of Civil Engineers and the American Society for Testing Materials. Mr. Fisk has been engaged in engineering work with the American Bridge Co., the Mead-Morrison Mfg. Co., Boston, and Freyn, Brassert & Co., Chicago. He is a member of the Western Society of Engineers.

Benjamin G. Lamme, chief engineer of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., recently was presented with the Joseph Sullivant medal by Ohio State university. Mr. Lamme, who graduated from Ohio State in 1888, is the first to receive this medal, which, in the future, will be awarded once every five years to a son or daughter of

the university, who has accomplished some notable achievment. Although a graduate in mechanical engineering, Mr. Lamme always has devoted his attention to electrical problems. His genius was discovered by the late Albert Schmid in the Westinghouse test room, where he began work May 1, 1889. He has a long achievement in electrical science and has been a prolific inventor. Most of the early rotary converter patents were in his name and he is the father of the 60-cycle converter. The single-phase railway motor also stands to the credit of his genius. In the development of turbo-generator design and alternating-currency apparatus he contributed conspicuously. In 1917 he was elected chairman of the inventions committee of the naval consulting board, and in June, 1919, was awarded the Edison medal by the American Institute of Electrical Engineers.

Edgar Johnson has been elected a member of the board of directors of the Pollak Steel Co., Cincinnati.

Charles R. Hare has resigned as superintendent of the New Britain Machine Co., New Britain, Conn.

H. K. Hallett has succeeded Mary W. Phinney as president of the Warren Steam Pump Co., Warren, Mass.

Lamont M. Clark, Southbridge, Mass,. has entered upon his new duties as assistant treasurer of the Rodney Hunt Machine Co., Orange, Mass.

William L. Hoffman, who is sales agent in the Philadelphia district for the Brier Hill Steel Co., Youngstown, O., recently underwent a slight operation.

R. W. Heerlein has taken up his duties as vice president and general manager of the newly organized Flint Structural Steel Co., Flint, Mich.

Frank H. Willard, general manager of the Graton & Knight Mfg. Co., Worcester, Mass., has been elected president of the Employers' Association of Central Massachusetts.

C. P. Klein has been elected president of the Klein Iron Works, Bellevue, O. W. L. Willing has been named vice president and A. C. Lingling, secretary and treasurer of the company.

Jens Bertelsen has become associated with the Atlantic Works, East Boston, Mass., as vice president; Paul J. Bertelsen as works manager and Ralph C. Christensen as outside superintendent.

Col. E. F. Harvey, first assistant to W. H. Woodin, president of the Canadian Car & Foundry Co., Montreal, Que., has been elected to the board of directors of the Canadian company.

Henry Bruere, vice president of the American Metal Co., New York, has been elected a vice president of the Metropolitan Life Insurance Co., New York.

W. LaCoste Neilson, vice president and general sales manager of the Norton Co., Worcester, Mass., sailed Jan. 30 on the BERENGARIA for a European trip of several months.

P. K. Dayton has been placed in charge of the New York office of the Rivett Lathe & Grinder Co., Boston, recently opened at 149 Broadway.

W. H. Winterrowd, formerly chief mechanical engineer of the Canadian Pacific railroad, has been appointed assistant to the president of the Lima Locomotive Works, Lima, O.

Clyde Hicks, eastern representative for the Pollak Steel Co., Cincinnati, will be in charge of the company's New York office in the Equitable building.

Murray Jacobs has been appointed manager of the new Seattle office of the Alan Wood Iron & Steel Co., recently opened at 69 Columbia street.

A. S. Blanc, former agent in San Francisco for the Consolidated Steel Corp., has been appointed manager in the Seattle territory for the Milton Pray Co., San Francisco.

C. J. Cassesse, during the war in the ordnance department as purchaser of motor truck equipment, has been appointed general sales manager of the Four Wheel Drive Auto Co., Clintonville, Wis., succeeding G. P. Hewitt.

Russell Carter, formerly advertising manager of Brier Hill Steel Co., Youngstown, O., is now with Trumbull Steel Co., Warren, O., in its sheet sales department. He also has charge of advertising.

Raymond X. Laymond, who has been connected with the export sales department of the Chain Belt Co., Milwaukee, will be associated with Fitch S. Bosworth, in the Chicago office of the company.

Frank H. Howe, president of the Columbus Wire & Iron Works, Columbus, O., has been elected president of the National Association of Ornamental Iron & Bronze Manufacturers to succeed the late H. H. Suydam.

E. A. S. Clarke is spending two weeks in North Carolina preparatory to taking up his work as secretary of the American Iron and Steel institute. Mr. Clarke expects to assume his new duties Feb. 19.

George Bewley has become connected with Park & Williams, Inc., pig iron and iron ore, Real Estate Trust building, Philadelphia. Mr. Bewley will be in the company's pig iron department.

William M. Mickleborough, who has been with the Walworth Mfg. Co., Boston, in its branch house department since 1916, has been appointed assistant treasurer of the Walworth Ohio Co., Cleveland.

F. P. McIlyar, general manager of the Newton Steel Co., Newton Falls, O., has been elected to the board of directors of the company to fill the vacancy caused through the resignation of H. M. Steele.

A. J. Hair, who recently resigned his position with the Pittsburgh sales office of Manning, Maxwell & Moore, Inc., has become identified with the sales department of the Lamson Co., Syracuse, N. Y.

W. H. Reinherr has been appointed assistant superintendent in charge of shipping activities at the East Pittsburgh works of the Westinghouse Electric & Mfg. Co. Paul K. Shultz has been made supervisor of traffic at the same plant.

Donald Clute, formerly a member of the sales organization of the Cadillac Machinery Co., Detroit, has been placed in charge of the Detroit office of the Oilgear Co., Milwaukee, at 415 East Jefferson avenue, which was opened recently.

Breo LaPierre has been appointed district sales manager of the Central Iron & Steel Co., at Syracuse, N. Y., with headquarters in the Seitz building. Mr. LaPierre formerly represented the Lackawanna Steel Co. in the Syracuse territory.

Hugh J. Garvey, vice president of the Valley Mould & Iron Corp., Sharpsville, Pa., will resign that position March 1, to devote all his time to the Sharpsville Boiler Works Co., Sharpsville, as chairman of the board of directors.

C. C. Williams, for a number of years connected with the Mine & Smelter Supply Co., Denver, and the Salt Lake City office of the Westinghouse Electric & Mfg. Co., has become associated with Eccles & Smith Co., San Francisco, machine tool dealer.

G. M. Leslie, treasurer of the Bass Foundry & Machine Co. and the Fort Wayne Foundry & Machine Co., both of Ft. Wayne, Ind., has been elected president of both companies to succeed the late John H. Bass. C. T. Strawbridge will continue as vice president and L. Heely Link as secretary of the Bass company

Safety Work Extended at Braddock, Pa.

Pittsburgh, Feb. 13.—The reduction of the accident rate to 35 per annum from the average for the five years preceding 1921 of 510 per year, is the achievement of the Edgar Thomson Works at Braddock, Pa. of the Carnegie Steel Co. This record is its answer to the question: "Is there anything in safety first work?"

The plant has been thoroughly covered by safety committees composed of employes, and with a lost time accident rate of 7.8 per 1000 employes per year, was in 1922 awarded the Carnegie Steel Co.'s trophy for accident prevention. This incidentally established the lowest known record in the steel industry for an iron and steel establishment of the size and character of the Edgar Thomson Works, which is one of the world's largest steel mills.

To extend the safety methods that have proved so successful to the homes and families of the workers, the general superintendent, O. J. H. Hartsuff, has arranged a series of safety first lectures and entertainments in the Braddock Carnegie library auditorium for employes and their families, where the lessons of safety first in the streets and homes will be combined with entertainment. A feature of the course which is enlisting the interest of the entire town is the contest among school children for the best essays on a number of safety-first subjects. Prizes have been offered for the best papers on such subjects as "Dangers Between Home and School," "The Need of Safety in Modern Life", etc.

Let Contract for Mills

Four 30-inch sheet mills will be built immediately by the Columbia Steel Co. at its Pittsburg, Cal. plant. Contracts for the roughing and finishing mills together with the gear drive were placed early this month with the United Engineering & Foundry Co., Pittsburgh. This plant when completed will be the first installation devoted to sheet production west of St. Louis. Frank I. Ellis, Farmers Bank building, Pittsburgh, has been retained as consulting engineer by the Columbia Steel Co. Contracts for subsidiary equipment still are pending.

To Add More Sheet Mills

Officials of the Newton Steel Co. have decided to install two additional 28-inch sheet mills at their Newton Falls, O., plant immediately. The original plant, which included eight units, was placed in operation April 1, 1920. Three months later two more mills were added to the initial train. A description of the 10-mill installation was presented in the Nov. 4, 1920 issue of IRON TRADE REVIEW, page 1266. Construction was started last year on eight additional units, three of which now are being scheduled. With the completion of the two new units in April, the Newton Co.'s full complement of mills devoted entirely to the production of full finished sheets, will aggregate 20 and the position of the company will be elevated to one of the largest independent fine finished sheet-makers in this country.

Coke Output Continues to Show Increase

The production of beehive coke increased slightly in the week ended Feb. 3. The total output estimated from reports of cars loaded by the principal coke carriers, was 345,000 tons against 343,000 tons the week before. A decrease of 2000 tons in West Virginia partially offset the improvement in other districts.

A slight decrease has taken place in bituminous coal production. The estimated production for the week ended Feb. 10 is 10,200,000 tons. This is 4 per cent less than the 10,578,000 tons of one week before.

Ruhr Embargo "Helpful" to British Trade

WASHINGTON, Feb. 13.—Department of commerce officials believe that the new French order cutting off shipments of iron and steel from the occupied Ruhr territory into the rest of Germany will tend first to increase the demands upon the English iron and steel industry.

French operation of the mills in the Ruhr territory is considered here to be impossible. For France to undertake actively to fulfill German export contracts is regarded as an impracticable proposition. The fear of sabotage alone will result in wholesale cancellation of Germany's export contracts, it is believed.

The department stands on its original opinion of the situation, that continental requirements for iron and steel will flow more and more to Great Britain, giving American producers a freer hand in those world markets in which Great Britain and the Continent will now be less able to compete.

The treasury department recently ruled that Belgian sand of all classes is free of duty under paragraph 1675 of the tariff act.

Publish Booklet on Rail Steel Products

To meet the demand for accurate information as to the source and manufacture of steel bars for concrete reinforcement, the Rail Steel Products association recently has published an illustrated booklet entitled "Rail Steel for Concrete Reinforcing." It contains information on the methods of manufacture of all grades of reinforcing steel and indicates the properties of each.

The first section of the booklet is devoted to a general discussion of the source of all steel bars, production of billet bars and the various grades of billet bars manufactured. This is followed by a discussion of the development of rail steel bars and the processes followed in the manufacture of bars from steel rails. The physical properties of the rail steel bars, which remain the stame as in the original rail, also are enumerated. Discussion on other topics such as rerolling, crystallization, uniformity, brittleness, methods and results of bending, selection of building bars, building codes, etc., presents information of great value to the prospective buyer of reinforcing bars.

The second section of the booklet displays in an artistic way a large number of views of buildings and other construction in which rail steel bars were used. In this section are illustrations of concrete chimneys, buildings of all descriptions, elevators, storage warehouses, sewers, bridges, roads, agricultural implements, conveying machinery and furniture. The standard specifications for rail steel concrete reinforcing bars also are included.

Honors Veteran Employes

The Crompton & Knowles Loom Works, Worcester, Mass., gave a complimentary dinner to 282 men and women who have been in its employ 25 or more years, at the Bancroft hotel, Worcester, Jan 31. The special guests of honor were four men who have rounded out more than half a century with the corporation, they being George F. Hutchins, chairman of the development board and former general superintendent, who completed 50 years that day; John B. Syme of the sales department, 53 years; Charles T. Madaus, molder, 52 years, and Thomas J. Coonan, a foreman, 51 years. Mr. Hutchins was presented with a book containing the signatures of all present, while the other three were presented with gold watches by the corporation.

The Michigan Grey Iron Casting Co. has increased its capital stock from $10,000 to $250,000.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

THE plant built on Vogel's island in Milwaukee during the war by the Fabricated Ship Corp., and since 1919 used by the Milwaukee Marine Repair Co., has been taken over by the Wisconsin Steel & Dock Co., a new corporation of which J. J. Cato is general manager, and F. W. Stevens, secretary and treasurer. This concern also will take over and operate a wooden shipbuilding plant at Kewaunee, Wis. The Milwaukee yard will be improved by installing a sectional dry dock handling the largest Great Lakes vessels for repairs. It is engaged in a large number of repair jobs and construction of small craft, and has inquiries for bids on three lake tugs and a number of barges. Mr. Cato formerly was with the Clyde shipyards in Scotland and during the war was chief inspector at Duluth for the Emergency Fleet Corp. Mr. Stevens supervised finishing work for the Fabricated Ship Corp., and previously was general superintendent of the Ferguson Shipbuilding Co. at Buffalo.

* * *

THE Cutis & Marble Machine Co., Worcester, Mass., elected the following officers at its annual meeting Jan. 30: President, Edwin H. Marble; treasurer, Charles F. Marble; secretary, William C. Marble; superintendent, Albert C. Marble, who also are the directors

* * *

DIRECTORS of the Fremont Foundry Co., Fremont, O., were re-elected at the recent annual meeting of the company. The board chose the following officers: President, Charles J. Miller; secretary, L. N. Allen and treasurer, A. J. Kroenke.

* * *

THE Springfield Body Co., Boston, is understood to be considering the erection of a large addition to its plant there. It recently purchased additional property. It is understood to be planning to enlarge its plant so as to have a daily capacity of 2200 bodies.

* * *

THE Palmer-Bee Co., machine merchants, have purchased the property of the Detroit Foundry Co., Orleans street and the Grand Trunk railway. It will convert the plant into a machine and steel fabricating shop. The property is 247 x 300 feet.

* * *

THE Mirror Patented Stove Pipe Co., Hartford, Conn., held its first annual meeting Jan. 27, when the following officers were elected: President, Harry Blumenthal; vice president, Joseph M. Howard; secretary, Herman Blumenthal; directors, the officers and Paul E. Saling and John Baldwin.

* * *

THE Mead-Morrison Mfg. Co., East Boston, Mass., has booked the contract for building what will be the largest coal handling plant in the country. This involves the coal handling equipment for the new Hudson avenue power house of the Brooklyn Edison Co., Brooklyn, N. Y.

* * *

AN additional electric furnace with a capacity of 1500 pounds is being installed by the Burlington Brass Works at Burlington, Wis., together with considerable machinery. Since Feb. 1 a night shift is employed in nearly all departments. Business on the books is of greater volume than at any time in two and a half years.

* * *

THE interests in the Massachusetts Iron & Steel Co., Davenport, Mass., formerly held by Carl P. Dennett and A. A. Hale, have been purchased by H. F. Stimpson and A. O. Fulton of Wheelock, Lovejoy & Co., Inc., 128 Sidney street, Cambridge, Mass. Mr. Stimpson and Mr. Fulton are directors of both companies.

* * *

THE Beaton & Corbin Mfg. Co., Southington, Conn., at its annual meeting held recently elected the following officers: President, F. N. Wells; vice president, W. B. Trimbiell, New Britain, Conn., treasurer, A. R. Wells; secretary, H. B. Armstrong; directors include the officers and Thomas F. Welch and C. E. Smith.

* * *

NEW quarters increasing the space at least 75 per cent are being sought by the Bay Verte Machine Co. of Green Bay, Wis., owing to the large increase in business during 1922, which is being sustained this year. Besides doing a wholesale and jobbing business in all kinds of machinery and factory equipment, the company manufactures and repairs machinery. Lynn D. Joseph, vice president, has been made president following the resignation of D. I. Nelson, whose time is occupied by the management of the Nelson Machinery Co. of Green Bay. Mr. Nelson remains treasurer, however. L. W. Whitmore has been elected vice-president; Dr. G. E. Forkin, secretary, and E. L. Johnson and William Hoberg, directors William Hinkle remains general manager and member of the board

* * *

WORD has been received from the Jamestown Iron Works Co., Jamestown, N. Y., to the effect that it does not plan to rebuild its machine shop which was damaged by fire some time ago. However, it is continuing its foundry business as heretofore, none of its foundry buildings or equipment being damaged by the fire.

* * *

INSTALLATION of additional labor saving devices is being considered by the Standard Foundry Co., Buffalo, and it has asked manufacturers of such types of equipment to furnish data, etc. The company plans to eliminate unskilled labor as much as possible. J. H. Vought is purchasing agent of the company.

* * *

THE Ackermite Co. of America, manufacturer of bearing and packing metals, has removed its general offices, laboratory and foundry to its new plant at 3223 South Western boulevard, Chicago. The new plant will give the company a productive capacity of more than 100,000 pounds daily. A. H. Ackerman is vice president.

* * *

WITH $100,000 capital stock, the Mitchell Anti-Smut Machine Co., Zanesville, O., recently was incorporated under the laws of Ohio. It will engage in the manufacture of an anti-smut machine patented by J. H. Mitchell of Meeker, Colo. Incorporators of the company include, O. H. Wendell, J. B. Ford, W. B. Slates, S. M. Strump and J. H. Mitchell.

* * *

PLANS now are being made by the Boston Stove Foundry Co., 202-210 Border street, East Boston, Mass., to move into its new plant in Reading,

Mass., about May 1. The company will continue the manufacture of ranges.

* * *

ADVICES have been received from the Ross City Clay Products Co., Inc., Urichsville, O., to the effect a recent increase in its capital stock was made to finance the erection of another plant. The company will be in the market for sewer pipe machinery, engines, boilers, etc.

* * *

EXPANSION of the Adams Axle Co., Findlay, O., will include the employment of additional men within 90 days, according to President George M. Carter. A total of about 30,000 square feet of floor space has been added to the plant since Nov. 1. One new plant unit has been built. The company manufactures automobile axles.

* * *

FOR the purpose of dealing in iron and steel products, mill and quarry supplies, Witherow & Boyd have established headquarters at 1205 Chamber of Commerce building, Pittsburgh. D. Mac G. Witherow, formerly with the Jones & Laughlin Steel Corp.'s steel department for a number of years, and H. W. Boyd, who for a similar period has sold mill and quarry supplies, are the partners.

* * *

ORGANIZATION of the D. H. Schal Auto Brake Mfg. Co., Canton, O., recently was completed. The company, which will have a capitalization of $50,000, plans to engage in the manufacture of a new type of automobile brake. As yet it has not decided upon a site for its plant. Officers are: President, D. H. Schal; vice president, E. Gordon; treasurer, E. H. Miller; secretary, R. C. Myers and assistant secretary, R. Dayhuff.

* * *

PLANS now are being drawn for the erection of a foundry on Lansdown street, Cambridge, Mass., for W. T. Royce, former superintendent of the Mead-Morrison Mfg. Co., Boston, and associates. Ground for the erection of the building will be broken just as soon as the plans are completed, which is expected within 60 days. It is expected the plant will start on the production of brass and aluminum castings, but later on will add iron.

* * *

THE France Foundry & Machine Co. has bought the machinery, patterns and patents of the Charles Went Co., Findlay, O., and is moving the property to its plant at North Baltimore, O. The Went Co. has been in business in Findlay for 50 years. This additional equipment in the France plant will make it the largest machine shop for heavy work between Toledo and Columbus. All repair work of the France quarries in Northwestern Ohio will be done here. The main office of the company will remain in Toledo.

* * *

FRANK A. HUBER was re-elected president and treasurer of the Marion Steam Shovel Co., Marion, O., at an organization meeting, following the annual stockholders' meeting, Charles B. King, vice president and general manager; Harry C. Barnhart, secretary and director of purchases; Harry T. Bell, auditor and assistant treasurer, and Hart D. Barker, assistant secretary and credit manager; directors chosen include F. A. Huber, C. B. King, H. C. Barnhart, D. R. Crissinger, John A. Schroeter, Ray R. King and Frank S. Keller.

* * *

ANNOUNCEMENT has been made by the Conveyors Corp. of America, Chicago, of its acquisition from the Green Engineering Co., East Chicago, Ind., of all rights to the steam jet ash conveyor manufactured by the latter company. The transaction became effective Feb. 1. All orders for replacement parts and extensions will be filled by the new owner. The company, which is an amalgamation of the Griffin Engineering & Contracting Co., and the Girtanner-Davies Engineering & Construction Co., has installed fully 1400 ash conveyor systems.

* * *

THE Detroit Stove Co., Detroit, has practically completed arrangements for the acquisition of the assets of the Art Stove Co. with the exception of the manufacturing plant. W. T. Barbour, president of the Detroit Stove Co. says efforts will be made to increase the output of the product of the Art Stove Co. Officers of that company are President, William Dwyer; vice president and general manager, John O. Campbell; treasurer, Harry Kendall; secretary, Hugh Ledyard. Under the agreement the Detroit Stove Co. acquires the business, trade names, patents and good will of the Art Stove Co.

* * *

ANNOUNCEMENT has been made by the Globe Sherardizing Co., 1259 West Seventy-eighth street, Cleveland, that it has taken over the business of the Globe Plating Works, 1250 West Seventy-sixth street, that city. Both businesses are to be operated in a 2-story building of the Globe Stamping & Machine Co., and will engage in all forms of metal finishing, plating and electro-galvanizing. The Sherardizing rust proofing process also will be employed. The combined company aims at the largest production of its kind in this section of the country. M. J. Kelly is president, John Kelly, secretary-treasurer, and Edward Durkin, vice president.

* * *

PLANT of the Unique Brass Co., 123 Military avenue, Detroit, which was damaged by fire recently, will be in operation shortly according to John Grace, president. The loss to the plant was covered by insurance. The company has large orders on its books for local automobile body companies. President Grace said that a liberal building program would be started, probably during April, to take care of the continued expanding business. The other officials of the company are Robert Grace, secretary and George Grace, treasurer.

* * *

ORGANIZATION of the Universal Forging Die Co., 1684 Columbus road, Cleveland, recently was completed. Directors of the company consist of J. R. Taylor, J. J. Beckrest, J. B. Kliment and T. Hughes. The organization began business as a partnership of Taylor, Beckrest & Hughes, for the purpose of making drop forging dies. Mr. Taylor, who is a diesinker and die designer, formerly was connected with the Cleveland Drop Forge Co., Cleveland. Mr. Beckrest also is an experienced diemaker and was formerly a partner in the United Drop Hammer Die Co. Mr. Hughes was with the Cleveland Drop Forge Co. as superintendent and Mr. Kliment formerly was connected with the Rauch & Lang Co., Cleveland, in the die making department. The partnership started business in July, 1922, and has grown steadily since.

* * *

ANNOUNCEMENT has been made by the Tropenas Co., Brooklyn, N. Y., to the effect its Rio de Janeiro office has been appointed consulting engineer to the Brazilian war department for service at the Rio de Janeiro war arsenal. E. M. Roubieu, in charge of the Rio offices, will personally supervise the work. Appointment of the Tropenas company is the outcome of the failure of a European mission to bring about the desired results in revamping operations at the Rio arsenal. A program of improvement now is being prepared and it is probable that much American machinery will be required. A preliminary list of requirements include die

casting machines, centering machines, shell banding machines, machinery to weld copper bands or producing them from tubing, complete set of gages for shells, hydraulic forming presses, heat treating furnaces, diaphragm producing rig, quick bar cutting machines, cylinder grinders, a plant to produce twist drills and milling cutters, etc. Catalogs of equipment liable to be of interest in modernizing the arsenal are requested. Three copies should be sent to the Tropenas Co.'s Rio offices, addressed to Mr. Etienne Roubieu, Tropenas Co., Casa Maua-Sala No. 119, Avenida Rio Branco, No. 9, Rio de Janeiro. Brazil.

* * *

ERECTION of a huge automobile body plant at Pontiac, Mich., is planned by the Fisher Body Corp., Detroit. The company has acquired a site of 36 acres and it is understood will expend $2,000,000 on the first unit. It is understood, however, that the erection of the plant hinges upon the decision of the Grand Trunk railway to construct a belt line road near Pontiac.

* * *

THE Green Bay Dry Dock Co., Green Bay, Wis., has been awarded the contract to construct 10 steel barges for use on the upper Mississippi river by the government. The contract price is $107,740. The government now is building 15 wooden barges at Keokuk, Iowa, and Fountain City, Wis., to supplement the service to be established with the steel barges. Construction of the latter is to be started immediately.

* * *

WILMER M. SHALLCROSS and Paul F. Mess, both of Milwaukee, have organized the Shallcross Control System, Inc., Milwaukee, with a capital of 2000 shares of no par value. The company will manufacture and deal in all kinds of electrical machinery, devices, auxiliaries, machinery, etc., specializing in controlling devices and appliances. Temporary headquarters have been opened at 895 Hackett avenue, Milwaukee.

* * *

THE Cedar Rapids Auto Supply Co., owned by the Sier Co., wholesale hardware, Davenport, Iowa, has let the contract for a $75,000 2-story building to the Currie-Simpson Construction Co. of Waterloo, Ia. Eleven contractors submitted bids. Dimensions will be 60x140 feet. The building will be constructed at 613 Second avenue, east. Automobile accessories, equipment and allied lines will be handled.

* * *

DUE to increasing demand for its products, the Superior Spring Co., Springfield, Mo., has been compelled to enlarge its capacity. The company's 1922 business was fully double that of the preceding year and indications for 1923 are promising. According to B. F. Downey, secretary and treasurer, the greatest problem in 1923 will be the obtaining of deliveries of material for manufacture.

* * *

HARRY E. HARRIS, Bridgeport, Conn., engineer specializing on manufacturing methods, has taken over the activities of Hubbard, Harris & Rowell, Inc., Bridgeport, and will personally direct all work of organization, installation, equipment design and economic investigation. The corporation has wound up its affairs as consulting engineers and the business will be carried on in the future under the name of Harry E. Harris.

* * *

FEDRAL IRON WORKS, Inc., 119 First street, East Cambridge, Mass., recently took over the storehouse of the Barrett Mfg. Co., and converted it into a structural shop. The company will handle all classes of structural steel along with its regular line of ornamental iron work. Officers are: President, C. A. Merrifield; treasurer, A. M. Rich and estimator, R. W. Crosscup.

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CANT hooks to handle pig poles and heavy timbers will be manufactured by the Danbury Unbreakable Tool Corp., Danbury, Conn., which was incorporated recently with a capital stock of $50,000. A steel rod will run through the wooden handle of the pole to prevent its breaking. John W. Stole is president of the company and the other incorporators include Fred A. Stole and Angeline Casassa.

* * *

ORGANIZATION of the Flint Structural Steel Co., Flint, Mich., has been completed. The company is affiliated with the Massillon Bridge & Structural Co., Massillon, O., which recently purchased the Flint, Mich., plant of the Perkins Structural Steel Co. and in turn sold it to the Flint Structural Steel Co. Officers of the latter company are: President, E. Rice; vice president and general manager, R. W. Heerlein and secretary and treasurer, Charles D. Yost.

* * *

REMOVAL of its plant from Commercial avenue and Binney street, East Cambridge, Mass., to a modern building at Second avenue and Binney street, that city, recently was completed by the A. F. Robinson Boiler Works. The company is originator and designer of truck tanks for fuel oil and gasoline, and in addition makes underground storage tanks, from 100 to 500 gallons capacity and fuel oil tanks from 250 to 2000 gallons capacity.

* * *

EMPLOYMENT of female help in the coreroom has proved so satisfactory that the Western Malleable Co. of Beaver Dam, Wis., is building a coreroom, 38 x 58 feet, to be used only by girls and women engaged in this work. At present about 20 girls are doing piece work alongside of men but it is intended to engage from 40 to 60 more women, so that separate working quarters are being provided. The new coreroom is an addition to the South Street foundry, one of three shops operated by the Western company in Beaver Dam.

* * *

ERECTION of a 5-story building for the Hersey Mfg. Co., South Boston, Mass., manufacturers of water meters etc., now is under way. The first two floors of the structure, which will be 41 x 59 feet and cost about $50,000, will be utilized for offices, etc. The third and fourth floors will be devoted to parts manufacturing while the fifth floor will be a brass foundry extension. Officers of the company are: President, Francis C. Hersey; vice president and general manager, James A. Tilders; vice president, Walter A. Harvey; assistant manager, Henry D. Winton; treasurer, Francis C. Hersey Jr., and assistant manager, J. Franklin Charnock.

* * *

CYLINDER grinders, for automobile and all kinds of gasoline engine cylinder grinding, are to be manufactured by the National Grinder Co., Cleveland, which has been incorporated with a capital stock of $10,000. The company will do its manufacturing under contract, at least for the present, and will confine its activities to assembling the grinders and marketing them. It expects to get into actual production within 60 days, when a new plant now under construction on West Forty-seventh street, Cleveland, will be ready for occupation. Officers of the company have not been named as yet. Included in the incorporators are Paul H. Milde, 1132 Forest road, Lakewood, Cleveland, Julius P. Schweitzer, Otto C. Schweitzer, William I. Schout and Charles W. Craig.

* * *

THE David J. Joseph Co., Cincinnati, O., dealers in iron and steel scrap will open a scrap yard at Sciotoville, near Portsmouth, O., March 1. S. T. Rice connected with the company for a number of years, will be in charge of the new distributing center, which will take care of the mills at Portsmouth, Ashland, Ky. and West Virginia.

Obituaries

ALEXIS W. THOMPSON, former president of the Republic Iron & Steel Co. later of the Inland Steel Co. and prominent in the modern development of the iron and steel industry of this country, died suddenly Feb. 8 at a sanitarium in Battle Creek, Mich., where he had been undergoing treatment. A heart attack was the immediate cause of death. Burial was at New Castle, Saturday, Feb. 10.

Mr. Thompson was born near Sharon, Pa., in 1856. After finishing school at Sharon, he started for Chicago in 1871. On the train he met Samuel Kimberly, a pioneer of the iron and steel industry in the Mahoning and Shenango valleys and was persuaded to give up his western trip. Accordingly he went to work for Mr. Kimberly at New Castle, Pa., with the old Aetna Iron Co., which had a small blast furnace, a puddling mill and iron nail plant. In this employment he came into association with Peter Kimberly, a son of his employer. The latter inherited what was a alrge fortune for that day from his father which he lost and regained at least three times, always carrying with him those associated in the business.

When the Republic Iron & Steel Co. was formed in 1899 and absorbed the Aetna properties Mr. Thompson became a vice president and in 1901 president of the new company. Peter Kimberly did not go into the Republic company. Mr. Thompson remained as president of the Republic Iron & Steel Co. until 1905, when he resigned. Two years later he became a stockholder in the Inland Steel Co., Chicago, when that company built its first blast furnace. This came about through his ownership of an iron ore mine which Inland Steel Co. took over. After the financial panic of 1907 he was asked to become president of the company. He resigned in 1919 but retained his interest and continued as a director. At one time he was interested in the Sharpsville Furnace Co. at Sharpsville, Pa., the first to use upper lake ore by way of the canal from Lake Erie. Since 1919 he had lived a retired life. He had been losing ground recently and went to the sanitarium at Battle Creek to build up his health. His condition was not considered serious before the fatal attack overtook him.

Mark W. Ray, vice president of the Lava Crucible Co., Pittsburgh, died Feb. 4 in his home in that city. He was born in Indiana, Pa., and came to Pittsburgh 30 years ago to become a member of the firm of Ray, Weller & Co., public accountants.

David P. Thompson assistant to the vice president in charge of the operations of the Inland Steel Co. is a surviving son.

William E. Kuhlman, who was associated with his brother G. C. Kuhlman in the organization of the G. C. Kuhlman Car Co., Cleveland, died Feb. 8. He was 60 years old.

ALEXIS W. THOMPSON

Horace T. Potts, president of Horace T. Potts & Co., Philadelphia, large iron and steel jobbers, died Feb. 8 at the Halinemann hospital, that city, from double pneumonia. Mr. Potts was 78 years of age and had been ill four weeks. At the age of 20, Mr. Potts became head of the company bearing his name which was founded by his grandfather, William L. Potts, in 1815. Surviving him are five sons, four of whom are in the business, Harrison I., Thomas C., Horace M., and Charles W. all officers of Horace T. Potts & Co., Philadelphia.

Robert H. Hackney, president of the Pressed Steel Tank Co., Milwaukee, died Feb. 5 at the age of 53. He was widely known as the inventor and designer of numerous new types of pressed steel containers for gases and liquids. Following his graduation from the University of Wisconsin in 1893, Mr. Hackney joined the Pressed Steel Car Co. as a draftsman in the Chicago works, later becoming a shop foreman and then going to the Joliet works as superintendent. In 1901 he returned to his home in Milwaukee and purchased the Seamless Structural Co., organizing the Pressed Steel Tank Co.

A. H. Bauman, vice president of the Cleveland Duplex Machinery Co., Inc., Cleveland, died Feb. 4 in a Cleveland hospital, following a short illness of influenza. He was 32 years old. Mr. Bauman was born in Fremont, O., and after graduating from high school in that city went to work in the shops of the Lake Shore Electric Co. He later came to Cleveland where he became connected with the White Co. in the capacity of tool maker. During the war his services were requisitioned and he was made general foreman of the gun shop of the American Brake Shoe & Foundry Co. at Erie, Pa. At the close of the war, he became connected with the Cleveland Duplex company, and in October, 1921, was elected to the vice presidency.

John J. Duff, proprietor of the Duff Spring Co., Cambridge, Mass., died recently at his winter home, West Palm Beach, Fla.

John T. Anderson, general manager of the Davenport Machine & Foundry Co., Davenport, Iowa, died recently.

Guilford Smith, president of the Smith & Winchester Mfg. Co., South Windham, Conn., builder of machinery, died at his home Feb. 9, aged 83 years.

John Phillips Dary, superintendent of the White-Warner Co., Taunton, Mass., stove founder, died at his home in North Dighton, Mass., Feb. 5, aged 55 years.

James Gibbins, 76, for more than 40 years proprietor of the Springfield Iron Works, Springfield, Mass., died Feb. 3 at his home in that city, after a short illness. Mr. Gibbins recently retired.

John James Duff, head of the Duff Spring Co., Cambridge, Mass., died at his winter home in West Palm Beach, Fla., Feb. 2, aged 63 years. The business was established by his father, James Duff in 1875, and upon the latter's death about 30 years ago the son became sole owner.

George Albert Draper, for more than a quarter century treasurer of the Draper Corp., Hopedale, Mass., died in a Boston hospital, Feb. 7, following an opera-

tion. He was 67 years old. He had been identified with the industry since he was 20 years old, becoming a member of the firm of George Draper & Sons in 1877. He was treasurer of the Hopedale Machine Co. and the Hopedale Machine Screw Co. at the time of the consolidation as the Draper Co. in Dec. 1896, of which he was elected treasurer. He was also treasurer of the Northrop Loom Co., and identified with many other textile industries, including several in the South.

Spring Makers Are Merged in New Corporation

Incorporation of the Associated Spring Corp. under the laws of New York recently was effected, in which are combined a number of companies engaged in manufacturing springs for watches, clocks and machines. The companies in the combine are the Wallace Barnes Co., Bristol, Conn., the William D. Gibson Co., Chicago, the Raymond Mfg. Co., Inc., Corry, Pa., Barnes-Gibson-Raymond, Inc., Detroit, and the Wallace Barnes Co., Ltd., Hamilton, Ont. The new arrangement contemplates no change in either the managements or the personnel of any of the organizations involved. Each business will be operated as heretofore, the object being that the united plants from their combined experience will be better able to serve their customers.

An important unit of the new organization is Barnes-Gibson-Raymond, Inc. which recently was formed with a plant at Detroit, now in operation. All of the companies involved in the combination have been engaged in the spring manufacturing business for many years, and it is expected their association will result in the greatly increased benefits to be derived from, having five plants so arranged geographically as to cover practically the entire manufacturing field of the United States and Canada. In addition to the manufacture of springs, the Wallace Barnes Co. operates a cold-rolling mill. Fuller F. Barnes of Bristol, Conn., is president of the new corporation.

Denies Merger Report

Rumors of a probable merger of the Jones & Laughlin Steel Co., Pittsburgh, and the Inland Steel Co. are wholly without foundation, according to officials of the former company. In a statement denying the reports it is declared that a combination of the two interests has not been intimated and that there are not the slightest indications that it will ever be considered.

Wabana Mines

Resume Operations—Future Sales to Germany in Doubt

Toronto, Ont., Feb. 12.—The British Empire Steel Corp. has reopened the Wabana ore mines, despite the fact that its German contracts have been filled. The mines were closed several weeks ago, throwing 2200 men out of work. The corporation has not received notice from the German consumers of any intention on their part not to take more ore in 1923. No part of the contract was canceled, but future business depends on developments in the Ruhr. The corporation has issued the following statement:

"The British Empire Steel Corp., has resumed operations at the Bell Island ore mines in Newfoundland, solely on account of the distress in the district about Conception bay, arising from unemployment caused by the closing of the mines.

"The German steelworks in the occupied sections of the Ruhr have during the past two years used Wabana ore with much satisfaction and are desirous of continuing its use in 1923. However, future developments may arise whereby the Minette capitalists of France may acquire heavy interests in the German works. This might result in the exclusion of Wabana ores. The lack of assurance as to continuity of ore shipments in the navigation season of 1923 makes any new business very uncertain."

The Ontario hydroelectric power commission with the approval of the provincial government has ordered three additional large generators of 50,000 to 60,000 horsepower capacity for the Chippawa-Queenston development. Four generators are now in operation and a fifth is being installed.

The Toronto Transportation commission has let contracts representing a total of about $2,000,000 for the construction of repair shops, storehouses, track work and yards at Bathurst street and Davenport road. The general contract was awarded to the John V. Gray Construction Co. of Toronto. The new shops will be one story, 467 feet long and 452 feet wide. The storehouse will be 117 x 336 feet. It will be four stories in height and will be increased later to eight stories. The commission has purchased considerable equipment and is issuing a list of machine tools required, including several new lathes.

The Frost Steel & Wire Co., Hamilton, Ont., has taken over the plant and business of the Banwell-Hoxie Wire Fence Co., in that city. The properties of the two companies adjoin. For the present they will be operated separately, in producing and selling. Later the Frost company, which draws its own wire, will supply the Banwell plant whose supplies are imported. The Frost company makes all kinds of commercial wire and has an annual output of 20,000 tons. The output of the Banwell plant is 10,000 tons per year, chiefly fence wire.

Change Dates on Meeting at New Orleans

The dates on which the Tenth National Foreign Trade convention will meet in New Orleans have been postponed to May 2-4 accordng to announcement of O. K. Davis, secretary of the Natoinal Foregn Trade Council.

The convention will devote special attention to the European situation, the part played by imports in our national life, and transportation by rail and water. Group sessions will deal with the practical details of export sales management, finance, credits, and advertising, with particular consideration of problems affecting the Gulf Coast and the Pacific.

Sees Good Can Outlook

Net income of $3,101,603 after taxes and depreciation is reported by the Continental Can Co. Inc., for 1922. Net earnings were $4,438,508 in 1922, against $1,529,042 in 1921. President Thomas G. Cranwell of the company said that the outlook for the canning industry was favorable. Stocks of canned goods are small and will be largely consumed before the packing season of 1923 begins. All indications point to a large pack this year and a consequent heavy demand for canning material according to President Cranwell.

Allis-Chalmers Reports

The Allis-Chalmers Mfg. Co., Milwaukee, reports net profits for 1922 amounted to $2,208,549, against $2,215,467 in the preceding year. Gross sales last year were $20,794,045, against $24,685,257 in 1921. Unfilled orders on Dec. 31 totaled $8,215,545, against $8,288,920 Sept. 30, and $7,300,574 Dec. 31, 1921. During the fourth quarter of 1922, ended Dec. 31, sales billed totaled $5,863,654, against $4,645,054 for 1921. Net profits after federal tax were $479,985, against $384,032 in 1921, which figures included adjustments of $100,000 on contingency and tax reserve set up in excess of requirements in the early part of 1921, and later written back to earnings.

Latin America Needs Equipment

Countries Rank High as Importers of American Equipment—Markets Are Expanding as Development Work Gets Under Way—Outlook for Increase in Present Demand Encouraging—Individual Markets Analyzed

BY W. H. RASTALL

AMERICAN export statistics for 1921, 1919, 1913 and 1910, bring out the fact that of the 20 leading countries that were purchasers of American machinery, 17 largely were free from reconstruction problems and similar troubles resulting from the war. Latin American countries have been shown to rank high as markets for American machinery and in the following an effort is made to analyze these markets.

Transportation routes as at present developed, make it desirable to divide the entire Latin American territory into three groups; namely Mexico and Central America, the West Indies and the countries bordering on the Caribbean sea; and other countries in South America proper. The comparative importance of these markets has changed since before the war. The nature of these changes is indicated in the following table, from which it will be noted that the machinery exports from the United States to the entire Latin America group expanded from about $15,000,000 in 1910 to $105,000,000 in 1920, falling to $92,000,000 in 1921. The percentage of the total exports of American industrial machinery absorbed by the markets of Latin America fell from about 30 per cent in 1910 to 15 per cent in 1915, but expanded to 37.4 per cent in 1921, at which time the trade was evenly divided between the above three groups of countries.

Unfortunately the statistics published by the different Latin American governments do not provide a great deal of assistance to the American exporter in solving his problem, as in many cases the classifications employed scarcely meet his needs. In prewar days German manufacturers secured better returns from the markets of Latin America than from any other part of the world, and British manufacturers have secured important business from these markets for many years. Because of the earlier entry of European interests into this trade, due in part to financial affiliations, these interests secured an exceptional position, largely because American manufacturers had not given the market the necessary attention.

During the war, when many of the Latin American countries were more or less cut off from their accustomed sources of supply, new industries were established. In a number of instances these industries have flourished, thus creating a field for the sale of American machinery.

Cuba: Although the table published in *Commerce Reports* for Jan. 22 indicates that among our foreign markets throughout the entire world Mexico ranked 1, 9, 4, 2, in the years 1921, 1919, 1913, and 1910, respectively, while in the same years, Cuba ranked 3, 5, 6, and 5, the chart accompanying that article shows that since 1915 Cuba has been our best Latin American market, except during unfavorable sugar market years, such as during the last two or three years. However, the price of sugar is now perhaps 35 per cent above the 1913 level, so that it would appear Cuba is well started on the road to recovery. Furthermore, there seems to be reason to discount somewhat the press reports that large quantities of American machinery still remain undelivered at Cuban ports. It has been estimated that the glut of merchandise, which at one time had accumulated in the bonded warehouses of Cuba, has been reduced from the highest total (perhaps $60,000,000 to $80,000,000) to a present total not exceeding $10,000,000 to $15,000,000. Conditions in the machinery markets of Cuba well deserve careful attention at this time. In this connection it is interesting to remember that, in spite of recent business disturbances, the Cuban exchange has remained at par.

Mexico absorbed more American machinery than any other country in the world in 1921. In spite of unsettled conditions, that country for a number of years has been one of our most important markets. It is true that there are certain problems involved in contracting to deliver machinery and receive payment at a Mexican destination, but those manufacturers who arrange to collect before their products cross the border have found their Mexican business attractive and the volume of such business has been large. The Mexican exchange is close to par.

Brazil, during the years 1921, 1919, 1913, and 1910 ranked 9, 10, 5, 9, respectively, among the markets for American machinery, absorbing over $8,700,000 in 1921, in spite of the fact that the rates of exchange have been unsatisfactory. In July, 1913, the milreis was worth 32.45 cents; by July 31, 1920, it had fallen to 21.6 cents; and on Nov. 15, 1922, it was quoted at 11.53 cents. It should be remembered that Brazil is larger than the United States, but its railway mileage is only equal to approximately what was in operation in the United States in 1855. The country is undeveloped and

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Destination of Industrial Machinery Exports

Destination	Fiscal year 1910	1913	1915	1919	Calendar year 1920	1921
Canada, Newfoundland, etc.	$14,368,755	$32,740,377	$15,740,484	$57,490,321	$68,534,672	$28,867,066
Europe (except Balkans)	14,151,707	29,117,195	89,790,973	112,178,313	116,848,098	44,844,196
South America	5,553,574	10,690,991	4,606,836	26,180,072	35,787,203	30,631,382
Mexico and Central America	6,914,500	6,433,548	2,858,474	11,450,859	22,293,921	34,381,861
West Indies, etc.	2,923,918	5,375,266	4,466,958	22,248,987	47,087,299	27,146,318
Total Latin America	15,391,992	22,499,805	11,932,268	59,879,918	105,168,423	92,159,561
Asia (except Asia Minor)	3,805,620	6,530,936	4,443,287	73,116,419	71,296,081	64,424,150
Australasia	2,209,862	3,566,129	2,999,898	5,792,748	8,171,153	7,706,546
Africa	1,441,949	1,591,746	1,573,369	5,615,898	7,652,579	4,643,732
Other	119,713	424,884	567,052	6,382,142	5,959,351	3,791,113
Grand total	51,489,598	96,471,072	77,047,331	320,455,759	383,630,357	246,436,364
Percentage to Latin America	29.9	23.3	15.5	18.7	27.5	37.4

contains wonderful opportunities for development that lead to the purchase of machinery. The population of Brazil is over 30,000,000. The country shows signs of developing rapidly.

Argentina ranked 10, 11, 10, 6 as a market for American machinery in 1921, 1919, 1913, and 1910. Exchange, which stood at 43.45 cents to the peso in July, 1913, and was 39.06 cents on July 31, 1920, and 20.125 cents on August 17, 1921, had recovered to 36.1 cents on Nov. 15, 1922. Argentina, though only about one-third the area of Brazil, has a 20 per cent greater railway mileage, with a population of about 8,500,000.

Among the markets for American machinery Peru ranked 14, 20, 19, 21 in 1921, 1919, 1913, and 1910. In July, 1913, the Peruvian pound had an exchange value close to parity. On July 31, 1920, it was worth $3.65, and on Nov. 15, 1922, had recovered to $3.91. Peru took more machienry than South Africa in 1921. At present important railway expansion, irrigation work, and the development of hydroelectric and other utilities are being suggested in Peru, which will require machinery, in addition to the mining demand for mining machinery that has so long come from this country.

Chile ranked 15, 12, 14, 14, respectively, in 1921, 1919, 1913, and 1910. Chilean exchange has been unsatisfactory, although it has improved somewhat recently. To a great degree Chile depends upon the prosperity of the nitrate business. Chile took $5,600,000 of American machinery in 1919 and $3,500,000 in 1921.

Dominican Republic, in 1921, 1919, 1913, and 1910 ranked 16, 24, 18, 22 in the shipments of American industrial machinery. In 1921 it absorbed $3,250,000 worth.

Colombia ranked 18, 25, 21, 24 among our machinery markets. In the interval since 1913 Colombia has placed its currency on a gold basis, so that the exchange problem is no longer important. At present Colombia is an exceptionally promising market, because of the extensive oil operations and the comprehensive railway program.

Venezuela ranked 25, 29, 26, 26 in 1921, 1919, 1913, and 1910, but it should be remembered that, although the rank has not changed materially in a decade, the volume of the country's purchases of our machinery has expanded from $110,000 to $1,400,000.

Fireproofing Orders Gain

Total shipments of General Fireproofing Co., Youngstown, O., in 1922 amounted to $6,297,123, according to report of President W. H. Foster made to stockholders at the annual meeting of the company. Net profits, after deducting preferred dividends and depreciation but before deducting federal taxes amounted to $334,850. Unfilled orders are larger than at this time last year and daily sales show an increase over those of last year. The company intends to enlarge operations soon and will probably increase its working capital through additional sale of stock now held in treasury. Directors and officers were re-elected.

Approve Reorganization of Trumbull Steel Co.

Stockholders of Trumbull Steel Co., Warren, O., have approved the re-organization of their company under the new Ohio no par value common law. They also increased the preferred stock from $10,000,000 to $15,000,000. The present $25 par value shares will be exchanged for no par value shares. The main facts in the financial statement of the company were given in the Feb. 8 issue.

With favorable conditions Trumbull can produce 500,000 tons finished products per year, President Jonathan Warner told stockholders. He also said that it has been the policy of Trumbull to develop finishing capacity ahead of those making raw and semifinished materials. During the year Trumbull purchased additional railroad cars to haul its coal from the mines it owns in Pennsylvania.

Extension Plans Given

Further details of the extension of the plant of the Franklin Steel Works, Franklin, Pa., manufacturer of concrete reinforcing bars, the news of which was given in the Feb. 1 issue of Iron Trade Review, are announced. The improvements represent an extension of the 12-inch mill. A new building 45 x 425 feet for which contracts have been let, will house two additional stands of rolls, hot beds, shears, twisting machines, and other equipment incident to such an installation. An additional 10-ton electric crane will be purchased.

Plant Expansion Planned

Directors of the United States Cast Iron Pipe & Foundry Co. have decided in favor of an appropriation for the expansion of the company's Birmingham plant to permit the installation of additional machines for producing cast iron pipe by means of the De Lavaud centrifugal process. In addition, a 10-machine De Lavaud plant will be installed at the company's Burlington works.

Japanese Iron and Steel Imports Nearly Doubled

Washington, Feb. 13.—Japan's imports of iron and steel in the first 10 months of 1922 totaled 1,305,633 tons, against 718,441 tons in the same period of 1921, the increase being due, according to Luther Becker, of the iron and steel division of the department of commerce, to the quickening of competition by Germany and the inflow of much pig iron from India. In the first 10 months of the respective years Japan's chief imports from various countries were as follows, a picul being 133⅓ pounds:

	1920 Picul	1921 Picul	1922 Picul
Pig iron, ingots, and slabs	4,960,688	3,109,158	4,887,951
Blooms, billets From—			
China	1,935,655	939,709	1,481,373
Kwantung prov.	516,952	922,942	993,540
British India	513,835	545,815	1,296,498
Great Britain	898,433	370,284	198,463
Sweden	227,271	293,932	82,866
United States	599,615	35,550	141,697
Australia	239,564	.....	1,736
Bars, rods, plates, sheets, wire, etc.	12,250,272	6,657,871	12,807,912
China	178,110	19,066	82,115
Great Britain	1,824,907	1,196,888	2,062,267
Germany	26,656	272,305	2,294,680
Belgium	14,053	269,241	972,447
Sweden	50,421	27,926	63,344
United States	10,075,198	4,836,012	7,280,093
Pipes and tubes	596,641	522,896	506,860
Great Britain	87,431	43,872	18,342
United States	507,325	471,339	479,261
Nails	322,500	218,945	529,234
United States	315,236	129,631	258,275

Condemns Pittsburgh Plus

The message transmitted by Gov. J. J. Blaine of Wisconsin to the legislature at the beginning of its biennial session at Madison, Wis., recently condemned the Pittsburgh basing point practice as an unfair discrimination against the people of his state.

"The effect of this practice is to concentrate manufacturing industries in the East, with the resultant high cost of all steel products and of every undertaking in which steel is used," said Governor Blain. "It curtails the employment of labor in Wisconsin. The practice operates as a fraud and cheat on Wisconsin and her people. Wisconsin should afford all reasonable assistance in bringing about a discontinuance of this unfair practice."

To Sell Army Terminal

Washington, Feb. 13.—Sealed bids for the sale of the Port Newark terminal, N. J., supply base will be opened by the war department at Washington March 1. The base comprises 119 acres, with such improvements as barracks and quarters, heating plant, fire station, railroad trackage, sewer and water system, wharves and docks, warehouses, fencing and hospital. Eighty-five per cent of the purchase price can be paid in semi-annual installments at 5 per cent interest if desired.

Still Buying Single Tool Units

Large Orders Are Lacking Despite Apparent Need of Additional Machinery—Inquiry Volume Still Is Heavy—Norfolk & Western Inquiries for Large List—Missouri-Pacific Buys—Crane Demand Is Improving

BUYING of machine tools and shop equipment continues of a scattered character and is confined to single unit purchases. This, to a great extent, reflects the caution being exercised by equipment users in regard to enlarging their facilities, for while buying is small the inquiry volume is enormous, indicating a need of more machinery for replacement purposes.

Railroad inquiries continue to come out from time to time. Within the past few days the Norfolk & Western entered the market for approximately 42 machines, bids on which close Feb. 26. Inquiries also are in the market from the New York Central, the New York, New Haven & Hartford and several others. The Missouri Pacific has been a large buyer closing on approximately $150,000 of various tools.

General industrial operations are gaining steadily and the betterment in business is plainly shown by the larger volume of orders and inquiries. The General Electric Co., Schenectady, N. Y., continues an active buyer, although its requirements still are far from being filled. Production machinery is more in demand than other types, although considerable heavier equipment is being taken. This latter is going to the railroad and allied industries; the former is being taken by the general manufacturing field.

Machine tool prices continue to stiffen although no additional advances have been noted. Small tools are being pushed gradually to higher levels.

Crane and conveying machinery demand is improving. More orders are noted and inquiries are increasing. This is said to be due in some measure to the shortage of labor, which daily is becoming more of a problem. The outlook in this market is good as many manufacturers are considering expansion programs.

Norfolk & Western Inquires for 42 Machines

NEW YORK, Feb. 13.—Outstanding in the local machine tool market is a list of 42 items for the Norfolk & Western railroad. Other railroad activity here appears confined principally to the New York Central and the New York, New Haven & Hartford, mentioned last week as figuring on equipment. The New York Central is understood to have closed tentatively on a tire wheel lathe, a car wheel borer, and several wheel presses for Oswego, N. Y., and is also closing on some other machinery. The Missouri Pacific has bought approximately $150,000 of equipment.

An improvement is seen in demand for conveying equip-

Crane Awards and Inquiries of the Week

Orders Placed

Two 30-ton used cranes equipped with 50-foot booms for the United States Steel Corp.; one 20-ton used crane, 50-foot boom, for the Wisconsin Iron & Steel Co., Madison, Wis.; and one 50-foot used wrecking crane for the Commonwealth Steel Co., St. Louis, all to Philip T. King, 30 Church street, New York City.

One 75-ton wrecking crane for the Denver & Rio Grande, to Industrial Works.

One 150-ton wrecking crane for the Illinois Central railroad, to Industrial Works.

One 80-ton electric crane, 62-foot span, for the Norfolk & Western to Niles-Bement-Pond.

One 10-ton electric crane, 27-foot span, for the Darling Valve & Mfg. Co., Williamsport, Pa., to the Shepard Electric Crane & Hoist Co.

One 30-ton used crane, 50-foot boom, for Reading Iron Co., Reading, Pa., to Philip T. King, 30 Church street, New York City.

One 25-ton used crane, 50-foot boom, for the Long Island railroad to Philip T. King, 30 Church street, New York City.

One 20-ton locomotive crane, 40-foot boom, equipped with magnet and generator, for Streator Car Co., Chicago, to Industrial Works.

One pile driver for the Canadian Pacific to Industrial Works.

One 30-ton used crane, 90-foot boom, for Public Service Production Co., Newark, N. J., to Philip T. King.

Two 40-ton electric cranes for the Baldwin Locomotive Works, Philadelphia, placed with unnamed builder.

One 60-ton, 4-motor crane with 30-foot boom for the Power Construction Co., Worcester, Mass., to Milwaukee Electric Crane & Mfg. Co.

One each 10 and 25-ton cranes for the Ingersoll-Rand Co., Painted Post, N. Y., to the Pawling & Harnischfeger Co., Milwaukee.

One 15-ton and one 20-ton with two 10-ton trolleys for the Dravo Contracting Co.'s new building at Pittsburgh to the Shaw Electric Crane Works, Muskegon, Mich.

One special 3-ton jib crane for the Gifford-Woods Co., Oakmont, Pa., to the Barber-Foster Engineering Co., Cleveland.

One 5-ton, 3-motor electric traveling crane with 30-foot span for the Ajax Iron Works, Corry, Pa., to the Northern Engineering Works, Detroit.

One 30-ton used crane, 60-foot boom and two 15-ton used cranes with 45-foot boom for the Jay-Kay Stevedore Mfg. Co., Norfolk, Va., to Philip T. King, 30 Church street, New York City.

One 100-ton, 4-motor crane, 65-foot span, for the Schenectady plant of the General Electric Co., to the Cleveland Crane & Engineering Co.

One 3-ton, 28-foot span, for the Schenectady plant of the General Electric Co., to the Northern Engineering Works.

Two 20-ton used cranes, 50-foot booms, for Norfolk & Western railroad, Norfolk, Va., to Philip T. King, 30 Church street, New York City.

One 25-ton used crane and one 30-ton used crane, both with 50-foot booms, for Clarke Mfg. Co., Newark, N. J., to Philip T. King.

One 3-motor, 6-ton electric traveling crane for the Rigg Cut Stone Co., Windsor, Ont., to the Northern Engineering Works, Detroit.

One 10-ton electric traveling crane with 38-foot span and two 3-ton handpower traveling cranes for the Ulen Contracting Co., New York, to the Northern Engineering Works, Detroit.

Orders Pending

One 10-ton and one 15-ton electric crane, both with 40-foot span, and one 10-ton electric crane, 53-foot span, for the Schenectady plant of the General Electric Co., bids asked; further inquiries expected out shortly.

One 25 or 30-ton trolley for Merrill Bros., Maspeth, L. I., bids asked.

Cranes for American Sheet & Tin Plate Co. and one 10-ton trolley for its Laughlin works; action deferred.

One 5-ton, 3-motor alternating current, cage-controlled crane with 70-foot span for the Sprague Electric Works, New Kensington, Pa.; bids being taken.

One 10-ton crane for the Superior Steel Corp., Pittsburgh; action deferred indefinitely.

Three 125-ton ladle cranes, Carnegie Steel Co., Duquesne works, Pittsburgh; awaiting outcome of demonstration on ladle crane being built at its Homestead plant before deciding definitely whether to build the cranes itself or buy from an Alliance, O., builder.

Gantry cranes for dock at Pittsburgh for Carnegie Steel Co.; matter still in abeyance.

Cranes for improving South Side plant at Pittsburgh of the Jones & Laughlin Steel Corp.; matter in abeyance.

Cranes for sheet plant at Pittsburgh, Cal., for Columbia Steel Co.; four 30-inch sheet mills have been ordered from United Engineering & Foundry Co. Early action expected on cranes. Frank I. Ellis, Pittsburgh, is consulting engineer.

ment, a development reflecting the increasing shortage of labor. A number of locomotive cranes have been placed in this district, a substantial portion being used cranes. In addition, much better demand prevails for small equipment such as monorail hoists.

Volume of Orders Gaining

TORONTO, Ont., Feb. 13.—A good aggregate of business continues to come out in the Canadian machinery market. Both prevailing demand and that in prospect is greater than in the past two years. Inquiries continue to make their appearance in fairly good numbers, both for replacement purposes and on new works account. Buying on railway and automotive account has been the chief feature of the market and it is the general opinion that this demand will continue. Proposed hydroelectric projects also will have a stimulating effect on demand for electrical equipment and buying on this account already has reached a more active stage. Municipal governing bodies throughout the Dominion have recently announced their intention of spending money on equipment for waterworks, electric, sewage and many other public works.

P. Dupny, St. Timothee street, Montreal, Que., is asking for prices on a punch, planer, circular saws and 8 lathes. The Quebec Asbestos Co., East Broughton, Que., is spending $80,000 on improvements and additions. The Burlington Steel Co. is building an addition to its Hamilton, Ont., plant. Collingwood, Ont., will purchase motor generator sets, storage batteries, etc. The city clerk, Winnipeg, Man., will receive bids until March 15, for water tube boilers and accessories.

New Tools Are in Demand

BOSTON, Feb. 13.—Buying on the part of textile machine manufacturers continues to feature the tool market in New England. Inquiry from other fields is improving and general buying of the past week has been encouraging. Electrical manufacturers and automobile part makers are especially busy and several attractive lists have appeared from each of these branches of industry. In Connecticut one typewriter manufacturer placed orders for several automatic tools within the week and other manufacturers in a similar line are increasing production. Generally speaking, production machinery is the only type which is in strong demand, and in this class the stocks of used equipment are low so that most of the buying is in new tools. Railroad repair shops have been in the market and altogether have purchased between 15 and 20 tools from local dealers. Punches, squaring shears, and bending tools have formed the principal items. Machine tool prices tend strongly upward. A manufacturer of electric drills advanced prices on certain styles about 5 per cent. Other manufacturers announce prices will be advanced before spring. New England tool manufacturers report an increasing inquiry for export. A general survey among representative manufacturers in New England indicates a reduction in orders in January as compared with December, but a steady improvement since the first of February.

Large Railroad Inquiry Current

CLEVELAND, Feb. 13.—Dealers and manufacturers of machine tools in this district have received an inquiry from the Norfolk & Western railroad calling for approximately 42 individual items. J. H. Clemmitt, purchasing agent for the road, at Norfolk, Va., has advised those to whom the inquiry has been sent that bids close Feb. 26. The inquiry calls for a 4-spindle planer type milling machine, one slab milling machine, one vertical turret lathe, one 72-inch plain radial drill, one plain turret lathe, one engine lathe, one vertical boring mill, one 24-inch heavy-duty lathe, one 84-inch plain radial drill, one 37 x 36 x 16 planer, one 48 x 10 heavy-duty lathe, one 16-inch sensitive drill press, one 2½-inch turret lathe, one 24 x 6 heavy duty lathe, one 600-ton car wheel press, one 48-inch wheel borer, one double head car axle lathe, one 42-inch car wheel lathe and one power hacksaw. There are several other railroad inquiries current here, but practically all of them have been in the market for some time. Very little buying is being done by the railroads for their shops in this district. Practically all such buying is confined to single tools.

Inquiry from the general manufacturing trade, especially the automotive and allied industries, continues to improve. However, the apparent need of machinery, shown through the volume of inquiries, is not reflected in actual buying, as inquirers invariably postpone purchases when buying action appears likely. A Leavenworth, Kans., interest is inquiring here for a number of lathes but, despite the fact some exceptionally low prices have been quoted on second-hand equipment, indications are that these tools will not be purchased for some time.

Orders are not large, as in weeks past, being confined to one or two machines at a time. These, however, are fairly numerous and are growing, indicating a need of equipment for replacement purposes. The largest purchase noted within the past few days included five gear hobbing machines. This was placed with a Cleveland dealer by a Muncie, Ind., manufacturer. Typical orders include one of a bolt cutter placed by a Cleveland interest and another of a grinder, placed by another Cleveland manufacturer.

Drop in Inquiry Volume Noted

PITTSBURGH, Feb. 13.—While inquiries for machine tools and other equipment have dropped off this past week, dealers continue to work upon the large number issued in January. Many of these still are pending notwithstanding the large number of sales. One seller states that if he could close but 10 per cent of the business pending he would consider February a good month. Reported sales show distribution is good. For instance, one used machinery seller states that in January he disposed of 48 machines to 28 different buyers. This past week several lists of new equipment have been awarded, including the Struthers, O., school requirement of seven machines, lathe, milling machine, drill press, grinders, etc., which went to William K. Stamets, this city. The Westinghouse Electric & Mfg. Co. continues to make purchases in various directions on its large list but the McClintic-Marshall Co. delays buying on its list for a riveting plant at McKees Rocks, Pa. So far as reported the Pressed Steel Car Co. has not bought its equipment recently asked for. One buyer has closed on a list of several items including a shaper, radial drill, 18-inch lathe, universal cutter and tool grinder, and a planer, all motor-driven. Several small shears have been disposed of and a used machinery seller states that within the past week a local user bought a keyseater; an Ohio manufacturer bought a large punch press and one in Atlanta, Ga., a lathe. Other sales include magnetic separators, drill presses, grinders, chucks, etc. One machinery interest with a display floor has disposed of a 14-inch lathe, a 24-inch shaper, large hack saw, and 20-inch drill press to four different customers. The Pittsburgh Meter Co., Pittsburgh, is expected to enter the market shortly for small equipment now that the contract for its building has been awarded. A West Virginia user has bought several woodworking tools.

Six or seven crane orders are noted, including two calling for two each. Much crane business still is pending

including several inquiries from United States Steel Corp., units on which action is delayed on account of deferred appropriations. One lot involves in excess of $300,000; another single crane calls for the expenditure of about $25,000, while several others involve amounts between those two extremes. The Jones & Laughlin Steel Corp. is expected to take early action on its cranes for its South Side plant. The Columbia Steel Co., Pittsburg, Cal., has closed on four 30-inch sheet mills, together with a gear-drive, the order going to the United Engineering & Foundry Co., Pittsburgh. It is understood some cranes are to be bought for this project.

Single Tool Orders Predominate

CHICAGO, Feb. 13.—Sellers of machine tools in the Chicago market report demand is keeping up and in some instances increasing. Most business now being taken is for single tools. As an exception a dealer recently booked one lot of tools aggregating about $40,000 including lathes, radial drills, shapers and gear cutters. The International Harvester Co. apparently has covered its requirements for its tractors production but continues to buy occasionally to fill some need. It recently placed four drill presses with a Chicago dealer. The Rock Island railroad has bought a small lathe. The Sante Fe railroad has not acted on the half dozen tools for which it recently inquired. Other railroads are entirely out of the market. The Studebaker Corp., Continental Motors Co. and Nash Motor Co. continue to buy from hand to mouth, coming into the market for odd pieces of equipment. Prospects for future buying are excellent, as a number of inquiries are practically ready but are awaiting appropriations or final action by officers. Among smaller shops considerable need for additional tools is manifested but many are putting off buying because of their financial condition. Inquiry in general is much larger than the average for the past few months and the percentage of sales to inquiries is steadily increasing. Prices are unchanged at the level of the past several weeks.

Metalworking Tool Demand Growing

MILWAUKEE, Feb. 13.—Opportunities for new business in metalworking tools are steadily increasing and trade is assuming the proportions of at least a small volume. Automobile shops still are the heaviest buyers, but it is significant that demand is being spread over more and more classes of metalworking. In many shops the amount of contracts on the books, while representing a decided increase over a year ago, does not yet require any large number of new machines, except for the replacement of inefficient or worn out equipment, the capacity to which most plants stretched themselves prior to the period of depression being sufficient for present needs. The Gilson Mfg. Co. at Port Washington, Wis., needs to do much retooling and to obtain new equipment to repair a heavy fire damage on Feb. 4. The Ajax Auto Parts Co. at Racine, and the Modern Auto Parts Co. at Sheboygan soon will be in the market for miscellaneous additional machinery. T. H. Field of Rice Lake is about to equip a shop for assembling automobiles. The Prentiss-Wabers Mfg. Co., Wisconsin Rapids, is having plans made for a shop addition to its stove works. The Wiese Laboratory Furniture Co. at Manitowoc finds it necessary to enlarge its metal and woodworking departments. R. W. Wells of New York contemplates the establishment of a general cutlery works in Kenosha. A $1,000,000 wet-process cement plant is being organized at Manitowoc.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

East of the Mississippi River

HARTFORD, CONN.—The Connecticut Light & Power Co. plans to construct an electric generating plant at Devon, Conn.

NEW BRITAIN, CONN.—The Elfox Mfg. Co. has been incorporated to build machines and make machine screw products with $50,000 capital by Leonard Fox, Newington, Conn., James Campbell and A. M. Fox.

NEW HAVEN, CONN.—The New England Auto Products Co. has been incorporated with $50,000 capital by Albert L. Perkins and George A. McCook, both of Hartford, Conn., James E. Schall and Charles F. Mitchell.

NEWINGTON, CONN.—The Acme Machinery & Equipment Co. plans the erection of a 1-story plant building, 100 x 225 feet. M. J. Pearson is manager of the company.

SOUTHINGTON, CONN.—The Aetna Nut Co. was damaged $30,000 by fire.

WATERBURY, CONN.—The Waterbury Farrel Foundry & Machine Co. has let the contract for a 2-story, 55 x 120-foot factory addition to cost $60,000.

WATERBURY, CONN.—The Brass City Machine & Tool Works, 29 Pearl street, plans the erection of a 2-story plant unit, 36 x 300 feet.

WATERBURY, CONN.—The Brass City Electric & Battery Co., Inc., has been incorporated to build motors, etc., with $25,000 capital by William H. Roden, C. F. Nollister, R. F. McLean and H. M. Sorenson.

NEWCASTLE, DEL.—The Wilmington Fibre Specialty Co. will double its capacity by the installation of considerable new machinery.

CEDARTOWN, GA.—J. T. Tice and R. J. Higginbotham plan to establish a foundry here to be known as the J. T. Tice Co.

CHICAGO—The South Side Laundry Co., 2820 South Wabash avenue, plans the erection of a 2-story power plant, 48 x 183 feet.

CHICAGO—The American Electric Fusion Corp., 92 Montana street, has broken ground for the erection of a 2-story plant building, 80 x 130 feet.

CHICAGO—The Pettibone-Mulliken Co., maker of frogs, etc., has let a contract for the erection of a 1-story plant addition, 130 x 400 feet, to cost about $200,000.

CHICAGO—H. Sundstrom, care of Ralph Oliver, 115 South Dearborn street, plans the erection of a light manufacturing building, one story, 45 x 60 feet.

CHICAGO—The Northwestern Foundry Co., 662 West Roosevelt road, has started to rebuild its foundry which recently was damaged by fire. The structure will be 51 x 126 feet.

CHICAGO—The B.L.Ball Mfg. Co., 400 North Michigan avenue, metals, etc., has been incorporated with 400 shares of no par value, by Ernest E. Rilliander, Jerome J. Sledkey and William B. Gammill. The company is represented by Orion, Brucker, Reichmann & Bontell, 10 South La Salle street.

EAST PEORIA, ILL.—The Central Illinois

Light Co. is drawing plans for the erection of a 3-story power plant, 90 x 160 feet.

JOLIET, ILL.—The Heggie Simplex Boiler Co., 1708 Collins street, has been incorporated with $150,000 capital stock to manufacture boilers, etc., by Thomas M. Heggie, Charles A. Russell and John F. Heggie. The company is represented by Barr & Barr, James G. Heggie building.

NORTH CHICAGO, ILL.—The Biflex Products Co., automobile bumpers, is completing the erection of a plant addition.

QUINCY, ILL.—The Quincy Compressor & Pump Co., 217 Maine street, has been incorporated with $50,000 capital stock by Mac Irwin, C. H. Irwin and H. C. Gates. The company is represented by Mac Irwin, 206½ West Twenty-fourth street.

STERLING, ILL.—The Frantz Mfg. Co., 303 Third street, is having plans drawn for the erection of a 1-story addition to cost about $30,000.

BATESVILLE, IND.—The Western Cabinet Co. contemplates the erection of a factory addition.

BATESVILLE, IND.—The Batesville Cabinet Co. contemplates the erection of a 1-story addition.

FT. WAYNE, IND.—The Dudlo Mfg. Co., electric coils, etc., plans to rebuild the part of its plant recently damaged by fire.

HAMMOND, IND.—The American Steel Foundries Co. plans a building, 240 x 330 feet, to cost $31,000.

INDIANA HARBOR, IND.—The plant of the American Steel Foundries Co. here recently was damaged by fire.

INDIANAPOLIS—The Alexander Box Co., 1102 Trumbull street, plans the erection of a plant unit to cost about $30,000.

JEFFERSONVILLE, IND.—The Interstate Public Service Co. plans to install additional equipment.

LAFAYETTE, IND.—The plant of the Joseph Horat Machine Shop recently was damaged by fire. The loss was estimated at $40,000.

NEW ALBANY, IND.—The plant of the National Hame & Chain Co. recently was damaged by fire.

SHELBYVILLE, IND.—The Kennedy Car Liner & Bag Co. plans to rebuild its plant recently damaged by fire.

LOUISVILLE, KY.—The Louisville Gas & Electric Co. plans to install hydroelectric generating equipment.

LOUISVILLE, KY.—The Louisville railway plans to rebuild its car shops recently damaged by fire.

LOUISVILLE, KY.—The Standard Milk Machinery Co. has increased its capital stock from $40,000 to $75,000.

NEWPORT, KY.—The Newport Body Co. has been incorporated to manufacture automobile bodies with $35,000 capital stock by A. M. Larkin, J. P. Weckman, W. C. Botts and Andrew Donaldson.

OWENSBORO, KY.—The Owensboro Forging Co. has increased its capital stock from $75,000 to $125,000.

PORTLAND, ME.—The Rain-Away Co. has been incorporated to make automotive equipment and accessories with $50,000 capital by Benjamin C. Boardman, H. Earle Shaw and Carroll B. Skillin.

PORTLAND, ME.—The Planet Steamship Corp. has been incorporated to build steamships with 100,000 shares without par value by M. E. Foster, M. G. O'Neill, A. B. Farnham and others.

WESTBROOK, ME.—The Westbrook Metallic Wire Works has been incorporated with $10,000 capital by Ransom N. George and Frank Wealthdale.

WESTBROOK, ME.—The Westbrook Metallic Works has been incorporated with $10,000 capital stock by Ransom N. George and Frank Wealthdale.

BALTIMORE—The Consolidated Gas, Electric Light & Power Co., Lexington building, plans the erection of a power house.

BOSTON—The First Massachusetts Carbon Fuel Co. has been organized to manufacture briquetted peat. The company plans to reclaim fuel from large deposits of peat in this district.

MALDEN, MASS.—The Malden & Melrose Gas Light Co. is to erect a $400,000 plant and double its capacity.

MELROSE, MASS.—The New Idol Mfg. Co. has been incorporated to build machinery with $50,000 capital by John P. Grammas, Harry C. Kostas, John E. Chronan and others.

SPRINGFIELD, MASS.—The Standard Electric Time Co. is to erect a 3-story, 50 x 90-foot factory addition, and a shipping room and storage building.

SPRINGFIELD, MASS.—The Moore Drop Forging Co. will build a 1-story, 76 x 110-foot heat treating building as an addition to its plant. Plans call for extensive electrical equipment.

TAUNTON, MASS.—The Weir Stove Co. has let the contract for a 4-story, 77 x 115-foot factory addition.

WORCESTER, MASS.—The Sterling Brass Products Co. has been incorporated to operate a foundry with $50,000 capital by Herman Stake, Peter F. Riordan and John C. Mahoney.

BENTON HARBOR, MICH.—The plant of the Benton Harbor Drop Forge Co. recently was damaged by fire. It will be rebuilt.

DETROIT—The J. W. Murray Mfg. Co., 1975 Clay street, is erecting a 1-story building, 72 x 125 feet, at an estimated cost of $25,000.

DETROIT—The Velick Scrap Iron & Machinery Co. plans the erection of a 1-story machine shop, 32 x 225 feet.

DETROIT—The New Haven Gray Iron Works has been incorporated with $15,000 capital stock to engage in general foundry work. Jay Baldwin, New Haven, Mich., is trustee.

DETROIT—The McLeod Foundry Co. has been incorporated with $30,000 capital stock to engage in general foundry work, by Malcolm McLeon, 1128 Marlborough avenue, and others. The company will erect a plant.

DETROIT—The Art Brass & Wire Works has been organized with $8000 capital stock to engage in the manufacture of ornamental iron and wire manufacture, by Gustav Rogge, 2540 Phillips avenue, Detroit, and others.

GRAND RAPIDS, MICH.—The Litcher Electric Co., 41-43 Market avenue, has awarded a contract for the erection of a 3-story plant building, 48 x 165 feet, to cost about $150,000.

HOLLAND, MICH.—The Federal Mfg. Co. has been incorporated with $250,000 capital stock to manufacture ventilators, etc., by H. S. Hart, 324 Hart street, this city, and others.

MONTAGUE, MICH.—The Montague Castings Co. has been organized with $20,000 capital stock to engage in general foundry work, by John Reed, Whitehall, Mich., and others.

NASHUA, N. H.—The International Paper Box Machine Co. plans an additional factory.

BAYONNE, N. J.—The Ingram-Richardson Co., Beaver Falls, Pa., enameled steel signs,

November Machine Tool Exports Decline

FIGURES recently issued by the United States department of commerce bureau of foreign and domestic commerce show that in November exports of lathes, boring and drilling machines, planers, shapers and slotters, and milling machines, totaled 256 tools valued at $151,886. This compares with 308 tools valued at $199,068 in the preceding month. During November boring and drilling machine exports were the largest numbering 137 machines valued at $57,670. Next in line came lathes, 60 such tools valued at $41,123 being exported, while milling machines and planers, shapers and slotters came next respectively. Destination of the tools is shown in the following table:

Countries	Lathes No.	Lathes Dollars	Boring and drilling machines No.	Boring and drilling machines Dollars	Planers, shapers and slotters No.	Planers, shapers and slotters Dollars	Milling machines No.	Milling machines Dollars
France	2	2,198	19	3,958	4	5,966	8	5,579
Netherlands	..	....	1	3,335	2	1,851	..	....
Norway	..	....	1	1,484	..	....	..	....
Spain	5	8,998	3	694	..	....	2	430
Sweden	..	....	1	498	..	....	..	....
Switzerland	..	....	1	508	..	....	..	....
England	..	....	4	1,115	..	....	3	4,183
Canada — Maritime Provinces	1	2,032	..	....	..	....	..	....
Quebec and Ont.	26	8,176	31	7,783	2	2,465	11	12,936
Prairie Provinces	1	36	2	9,334	..	....	..	....
Br. Col. & Yukon	..	....	4	488	3	58	..	....
Guatemala	2	3,286	..	....	..	....	..	....
Honduras	..	....	..	....	..	....	12	720
Panama	1	1,491	..	....	..	....	..	....
Mexico	4	2,414	13	10,060	1	1,760	1	1,310
Cuba	1	170	..	....	..	....	..	....
Dominican Repub.	1	261	..	....	..	....	..	....
Argentina	..	....	10	2,425	..	....	..	....
Bolivia	..	....	1	10	..	....	..	....
Brazil	..	....	..	....	2	5,818	..	....
Colombia	1	348	1	178	..	....	..	....
Peru	1	308	..	....	..	....	..	....
Venezuela	..	....	2	894	1	1,570	..	....
Aden	..	....	1	66	..	....	..	....
Straits Settlements	..	....	..	....	1	67	..	....
China	2	880	..	....	..	....	..	....
Japan	4	3,570	5	11,168	..	....	4	4,891
Palestine and Syria	..	....	..	....	1	420	..	....
Philippine islands.	7	6,741	..	....	..	....	1	3,069
Australia	1	214	36	1,737	..	....	..	....
Brit. East Africa	..	....	1	1,935	..	....	..	....
Total	60	41,123	137	57,670	17	19,975	42	33,118

plans the erection of a 1-story plant here, 180 x 325 feet, to cost about $75,000. The A. M. Allen Co., Cleveland, is architect.

NEWARK, N. J.—Clarence Dunn has leased a 1-story building at 17 Hackett street, for a machine shop and general repair works.

SHADYVILLE, N. J.—The Barrett Co., car heaters, plans the erection of a building.

BUFFALO—The Watkins Commercial Body Co., 666-72 Genesee street, plans the erection of a 2-story plant addition, 30 x 150 feet.

BUFFALO—The Niagara Blower Co., 486 Howard street, plans a 1-story, 60 x 180-foot building, to cost about $30,000.

NEW YORK—The A. H. Wolfgas Radiator Co. has increased its capital stock from $50,000 to $200,000.

NEW YORK—The Newman Commercial Body Corp. has been organized with $25,000 capital stock by A. and A. Newman and will operate a plant at 1745 First avenue.

OGDENSBURG, N. Y.—The Standard Shade Roller Co. plans the erection of an addition to cost about $50,000. H. M. Wheaton is general manager of the company.

ORCHARD PARK, N. Y.—The plant of the Keybolt Appliance Co. recently was damaged by fire.

WATER VALLEY, N. Y.—The Water Valley Foundry Co. plans to rebuild its plant recently damaged by fire.

Akron, O.—The Standard Oil Co. has purchased a site for a plant here.

BUCYRUS, O.—The plant of the Hadfield-Penfield Steel Co. recently was damaged by fire. The damage was estimated at $100,000.

CANTON, O.—The Swineford Mfg. Co., 942-8 Union avenue, plans to rebuild its plant which recently was damaged by fire.

CLEVELAND—The Parbrook Mfg. Co., 4600 Brook Park road, has a permit to erect an addition to its plant at an estimated cost of $40,000.

CLEVELAND—The Universal Forging Die Co. has been incorporated with $15,000 capital stock by Tom Hughes, 4111 Brooklyn avenue, John R. Taylor, Joseph B. Kliment, John J. Beckrest and John H. Nierath.

CLEVELAND—The Perfection Trailer & Mfg. Co. is having plans drawn for the erection of a factory building to cost about $75,000. H. W. Grieme, 110 Engineers building, is architect.

CLEVELAND—The National Grinder Co. has been incorporated with $10,000 capital stock to manufacture cylinder grinders, by Paul H. Milde, 1132 Forest road, Lakewood, Julius P. Schweitzer, Otto C. Schweitzer, William I. Schout and Charles W. Craig.

COLUMBUS, O.—The Ohio State Stove & Mfg. Co. plans a factory building, 32 x 90 feet.

NEWCOMERSTOWN, O.—J. B. Clow & Sons plans the erection of foundry extensions.

PORTSMOUTH, O.—The Make Fine Stove Co. has been incorporated with $25,000 capital stock by Otto Frese, Charles T. McKay, James R. Distel, H. A. Green and John F. Johnly

WADSWORTH, O.—The Ohio Injector Co. plans the erection of a 3-story factory addition, 60 x 200 feet, to be built at an estimated cost of $80,000.

WARREN, O.—The Warren Engineering Co. has the contract to erect a plant for the Ohio Galvanizing Co., Niles, O. The building will be 76 x 120 feet.

WHITE COTTAGE, O.—The Columbia Chemical Division of the Pittsburgh Plate Glass Co. plans the erection of a plant here.

APOLLO, PA.—The Apollo Steel Co. plans a 1-story plant building, 40 x 200 feet, to cost about $35,000.

BRIDGEVILLE, PA.—The Universal Steel Co. has awarded a contract for the erection of a 1-story addition, 50 x 150 feet.

CANNONSBURG, PA.—The Cannonsburg Steel & Iron Co. has awarded a contract for the erection of a 2-story, 80 x 200-foot manufacturing building to cost about $30,000.

CHAMBERSBURG, PA.—D. P. Minick, 147 East Queen street, plans a power house, 40 x 115 feet.

EAST PITTSBURGH, PA.—The Pittsburgh Meter Co. plans a 5-story plant building, 80 x 300 feet, to cost about $100,000.

ELIZABETHTOWN, PA.—The Morganthau Electric Co., 204-206 Market street, Harrisburg, Pa., plans the erection of a 2-story plant building here, 80 x 200 feet, to cost about $100,000.

ERIE, PA.—The National Foundry Co., Fifteenth street and Sassafras street, plans an addition, 96 x 122 feet, to cost $23,000.

ERIE, PA.—The Anderson Pattern Works has been incorporated with $16,000 capital stock to manufacture wood and metal patterns, etc., by F. F. Anderson, Robert A. Dugan and C. H. Anderson.

ERIE, PA.—The Nickel Plate Iron & Metal Co. has been incorporated with $25,000 capital stock by Louis S. Tenenbaum, 157 East Twenty-first street, Wolf Kaufman, 234 East Seven-

Warehouse Steel Prices

Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Boston	3.215c
Buffalo	3.25c
Chicago	2.95c
Cincinnati	3.10c to 3.25c
Cleveland	3.10c
Detroit	3.10c
New York	3.19c
Philadelphia	3.15c
San Francisco	3.40c
Seattle	3.60c
St. Louis	3.05c
St. Paul	3.05c
Los Angeles	3.50c

IRON BARS

Boston	3.215c
Buffalo	3.10c
Chicago	2.95c
Cincinnati	3.10c to 3.25c
Detroit	3.10c
New York	3.19c
Philadelphia	3.15c
St. Louis	3.05c

SHAPES, STRUCTURAL

Boston	3.315c
Buffalo	3.35c
Chicago	3.05c
Cincinnati	3.20c to 3.35c
Cleveland	3.16c
Detroit	3.20c
New York	3.29c
Philadelphia	3.25c
San Francisco	3.40c
Seattle	3.60c
St. Louis	3.15c
St. Paul	3.15c
Los Angeles	3.60c

PLATES

Boston	3.315c
Boston 3/16-inch	3.04c
Buffalo	3.35c
Chicago	3.05c
Cincinnati	3.20c to 3.35c
Cleveland	3.16c
Detroit	3.20c
Detroit 3/16-inch	3.40c
New York	3.29c
Philadelphia	3.25c
Philadelphia, ¼-inch	3.47c
San Francisco	3.50c
Seattle	3.60c
St. Louis	3.15c
St. Paul	3.15c
Los Angeles	3.75c

NO. 10 BLUE ANNEALED SHEETS

Boston, 3/16-inch	4.215c
Buffalo	4.05c
Chicago	4.00c
Cincinnati	4.00c
Cleveland	3.65c to 3.76c
Detroit	3.95c
New York	4.19c
Philadelphia	3.85c
San Francisco	4.50c
Seattle	4.85c
St. Louis	4.10c
St. Paul	4.25c
Los Angeles	4.70c

NO. 28 BLACK SHEETS

Boston	5.40c
Buffalo	4.85c
Chicago	4.85c
Cincinnati	4.75c
Cleveland	4.25c
Detroit	4.65c
New York	4.80c to 4.90c
Philadelphia	4.60c
San Francisco	6.05c
Seattle	5.85c
St. Louis	4.95c
St. Paul	5.10c
Los Angeles	6.10c

NO. 28 GALVANIZED SHEETS

Boston	6.40c
Buffalo	5.85c
Chicago	5.85c
Cincinnati	5.75c
Cleveland	5.25c
Detroit	5.65c
New York	5.80c to 5.90c
Philadelphia	5.75c
San Francisco	6.90c
Seattle	6.85c
St. Louis	5.95c
Los Angeles	6.90c

BANDS

Boston	4.40c
Buffalo	4.05c
Chicago	3.70c
Cincinnati	3.85c to 4.00c
Cleveland	3.86c
Detroit	3.90c
New York	3.99c
Philadelphia	3.95c
San Francisco	4.05c
Seattle	4.35c
Los Angeles	4.40c

HOOPS

Boston	4.90c
Buffalo	4.35c
Cleveland	3.86c
Detroit	4.20c
New York	4.59c
Philadelphia, 1 inch and wider 20 gage and heavier	4.25c
Seattle	5.00c

COLD ROLLED STEEL

Boston (rounds	4.15c
Boston (shapes	4.65c
Buffalo (rounds)	4.10c
Buffalo (shapes)	4.45c
Chicago (rounds)	3.95c
Chicago (shapes)	4.45c
Cincinnat (rounds)	3.90c
Cincinnati (shapes)	4.40c
Cleveland (rounds)	3.90c
Cleveland (shapes)	4.40c
Detroit (rounds)	3.95c
Detroit (shapes)	4.45c
New York (rounds)	4.05c
New York (shapes)	4.55c
Philadelphia (rounds)	4.00c
Philadelphia (shapes)	4.50c
San Francisco (rounds)	5.00c
Seattle (rounds)	5.25c
Los Angeles (rounds)	5.10c

Bourne-Fuller Service

includes immediate shipment of all Iron and Steel materials from Cleveland and Cincinnati

Warehouses

If you are not receiving our Stock-list we shall be glad to send it to you regularly upon request.

Upson Works

Open Hearth Steel Bars for special uses. Also a complete line of Bolts and Nuts. Prompt Shipments.

THE
BOURNE-FULLER CO.
Iron, Steel
Pig Iron
Coke

CLEVELAND

New York **Chicago** **Detroit**
San Francisco
Cincinnati

teenth street, and Isador Freitag, 944 East Tenth street.

HARBOUR CREEK, PA.—The Yerkes Steel Coupling Tie Co. is reported planning to build a plant here, 40 x 100 feet.

LATROBE, PA.—E. H. Williams is understood to be organizing a company here to engage in the manufacture of ingot molds. He formerly was connected with the Valley Mould & Iron Co., Sharpsville, Pa.

MEYERDALE, PA.—The Meyersdale Electric Light, Heat & Power Co. plans a power house addition.

OIL CITY, PA.—The Penn American Refining Co. plans the erection of a 1-story power house, 40 x 60 feet, to cost about $90,000.

PHILADELPHIA—The Beswick & Clay Co., Twenty-fifth and Callowhill streets, plans a 1-story power house.

PHILADELPHIA—The Apex Machine Co., 2801 West Susquehanna street, has purchased a site for a new plant.

PHILADELPHIA—A $12,000 mill will be erected by the Northern Woodworking Co., 1005 South Second street.

PHILADELPHIA—General contract for an $18,000 warehouse for the Merchant Warehouse Co., has been awarded the George Kessler Contracting Co.

PITTSBURGH—The plant of the Union Steel Casting Co. recently was damaged by fire.

PITTSBURGH—The McKinney Mfg. Co., manufacturer of hinges, etc., plans an addition to its plant.

PITTSBURGH—Bertrand P. Tracy, 901 Pennsylvania avenue, plans the erection of a 1-story plant building, 80 x 200 feet, to cost about $55,000.

PITTSBURGH—The Airo Electric Appliance Co. has been incorporated with $5000 capital stock by G. M. Sullivan, McKeesport, Pa., H. Morris, Sewickley, Pa., and F. C. Sullivan.

PITTSBURGH—The Pipe Thread Protector Co., of Pittsburgh, has been incorporated with $20,000 capital stock by M. R. Regan, Rochester, Pa., Nettie Gallinger, 5715 Northumberland avenue, Pittsburgh, and H. G. Gallinger, same address.

PITTSBURGH—The Max Solomon Co., iron, steel, metals, etc., has been incorporated with $1,000,000 capital stock by Max Solomon, 1202 Eighth avenue, Beaver Falls, Pa.; Edward L. Solomon, 5611 Wilkins avenue, Pittsburgh, and Henry A. Solomon, 1202 Eighth avenue, Beaver Falls.

YORK, PA.—A plant will be erected here by William Christensen, structural and ornamental iron worker, it is reported.

PROVIDENCE, R. I.—The O. & B. Chain Co. has been incorporated with $50,000 capital by Myer S. Olin, Joseph Olin and Benjamin Bazelon.

PROVIDENCE, R. I.—The Armbrust Chain Co. has been incorporated with $25,000 capital by Gottlob Armbrust, Hemrich Jaegle and Fred W. Bopp.

CRAMERTON, N. C.—The Mays Mills Co. plans the erection of a power house.

ATHENS, TENN.—The Athens Plow Co., recently organized with $100,000 capital stock, has a site on which it plans a 1-story foundry and machine shop.

BRISTOL, VA.—The Nickels Mfg. Co. is drawing plans for the erection of a 2-story factory building, 50 x 115 feet, to cost about $20,000.

LYNCHBURG, VA.—The Allison-Morrison Sign Co. plans a plant for the manufacture of signs to consist of two one-story buildings, 60 x 208 feet and 60 x 140 feet.

NORFOLK, VA.—The Berkeley Machine Works & Foundry Co. is reported planning the erection of plant additions.

ROANOKE, VA.—The Roanoke Tire & Rubber Co. plans the erection of a 3-story plant building. Charles H. Keffer is general manager.

CHILTON, WIS.—Hingiss & Bessler, of Kiel, Wis., automobile and farm machinery distributors, will build a $30,000 branch house, 60 x 150 feet, at Chilton, according to plans by Architect W. F. Neuman, Caswell block, Milwaukee.

KENOSHA, WIS.—R. W. Wells of New York is negotiating with the Kenosha association of commerce regarding the proposed establishment of a general cutlery works requiring financing to the extent of about $100,000.

MANITOWOC, WIS.—The Aluminum Specialty Co. will build a 2-story addition, 40 x 70 feet.

MILWAUKEE, WIS.—Contract has been let by the National Lead Co., 52 Second street, for a warehouse and maintenance shop, 106 x 116 feet, 2-story, at Fourth avenue and Virginia street. It will cost about $50,000.

MILWAUKEE—The storage and repair shop building of the Milwaukee Gas Light Co. at 134-140 Erie street will be enlarged by an addition, 60 x 220 feet. The general contractor is H. Schmidt & Son, Inc., 430 Farwell avenue.

PORT WASHINGTON, WIS.—The plant of the Gilson Mfg. Co. recently was damaged by fire. The loss was estimated to be in excess of $200,000.

RACINE, WIS.—The Hamilton Beach Co. plans the erection of a 3-story factory addition, 62 x 400 feet, to be built at an estimated cost of $240,000.

RACINE, WIS.—The Harvey Spring & Forging Co. contemplates the erection of a factory building. E. J. Harvey is president of the company.

SHEBOYGAN, WIS.—C. U. Boley, city engineer, is asking bids until Feb. 16 for a garbage disposal plant of the incineration type.

SHEBOYGAN, WIS.—The Modern Auto Parts Co. 2303 South Eighth street, is building an addition to the department devoted to regrinding gas engine cylinders and manufature of pistons, rings and pins. Rance Loop is works manager.

WEST ALLIS, WIS.—The Libby Chemical Co. has been incorporated here with a capital stock of $80,000 to manufacture a general line of industrial and phamaceutical chemicals. Theodore J. Muller, 6329 Greenfield avenue, R. R. Ferber and W. H. Liever are the incorporators.

West of the Mississippi

CHINO, CAL.—The Perfect Caster Mfg. Co. plans to erect a plant building. George Holcomb and W. S. Reilly head the company.

SACRAMENTO, CAL.—The Readers Welding Works has awarded a contract for the erection of a plant building to cost about $30,000.

SAN JOSE, CAL.—The Axford & De Shields Brass Works, 280 Golden Gate avenue, has awarded a contract for a 1-story plant building to cost bout $5000.

MUSCATINE, IOWA—This city plans a municipal electric light and power plant.

WATERLOO, IOWA—The Schoitz Tool, Gear & Machine Co., 227 West Sixth street,

Industrial Business Changes Recently Announced

SAN FRANCISCO offices of the Allan Wood Iron & Steel Co. have been moved from 465 Market street to 444 Market street. The company also has opened new offices in Seattle at 69 Columbia street, in charge of Murray Jacobs. A. B. Ambler is Pacific Coast manager of the company.

* * *

The Birk Harrison Co., Chicago, recently changed its name to the Birk Iron & Metal Co.

* * *

Removal of its San Francisco office from Tenth street to the Gunst building, Third and Market streets, where it occupies the entire top floor, has been announced by the Truscon Steel Co., Youngstown, O. Charles Holloway is in charge of the office.

* * *

Bertelsen & Pettersen Co., located on Border street, East Boston, Mass., recently went out of business.

* * *

Offices have been established at 149 Broadway, New York City, by the Rivett Lathe & Grinder Co., Boston. P. K. Dayton is in charge.

* * *

Seattle offices have been opened in the L. C. Smith building, by the Milton Pray Co., San Francisco and Los Angeles. A. S. Blanc has been appointed manager in charge of the office.

* * *

Due to the fact it has discontinued its forging business, the Arrow Forging & Tool Works, Chicago, has changed its name to Arrow Tools, Inc. There has been no change in ownership or policy of the company.

* * *

The Rice, Barton & Fales Machine & Iron Co., Worcester, Mass., has changed its name to Rice, Barton & Fales, Inc.

The Daily News Wishes Its Readers, Advertisers and Friends a Merry Christmas and Happy New Year

FOREMOST IN THE PEOPLE'S SERVICE

THE HAMILTON DAILY NEWS

WEATHER FAIR

ESTABLISHED 1879. Full Associated Press HAMILTON, OHIO, SATURDAY, DEC. ... GES TODAY Price

BOOST IN STEEL BUSINESS SEEN

Confidence Slowly Being Restored Says Iron Trade Review

CLEVELAND, Ohio, Dec. 24.—The Iron Trade Review says:

Despite the quieter tone of the iron and steel situation generally, sentiment is more cheerful and expectant than a few weeks ago. All things considered, the showing is better than there had been hoped for and there are more acceptable signs that confidence slowly is being restored to both buyers and sellers. The mills are working chiefly on tonnage gathered in during recent weeks. More and more, the feeling grows that a reasonable increase in the volume of

The Hamilton Daily News, Hamilton, O., was established in 1879, carries the full Associated Press reports, and is well patronized by large advertisers.

400 Newspapers Regularly Quote

IRON TRADE REVIEW

CLEVELAND

The international reputation and the World-wide circulation of the IRON TRADE REVIEW is the result of year after year of unfailing Editorial accuracy and reliability.

PROOF—

THE IRON TRADE REVIEW

"The Most Widely Quoted Trade Paper In The World"

has plans for the erection of a 1-story factory building, 50 x 121 feet.

LEAVENWORTH, KANS.—The Great Western Stove Co. has awarded a contract for the erection of a plant building to the Baer Engineering & Construction Co., First National Bank building.

DULUTH, MINN.—The Duluth Iron & Metal Co. has been incorporated with $500,000 capital stock by Louis and Gittel Zalk and Hyman Y. Joseph.

HIBBING, MINN.—The Oliver Iron Mining Co. is drawing plans for a crusher and screening plant at the Hull Rust mine.

MINNEAPOLIS—The Diamond Steel Products Co. has purchased a manufacturing plant here and plans to erect an additional structure for the mnufacture of automobile accessories.

RED WING, MINN.—This city plans an electric light and power plant. S. T. Irving is clerk.

DALLAS, TEX.—The Dallas Power & Light Co. plans the erection of a 2-story generating plant, 112 x 155 feet.

SEATTLE—The local board of works plans the erection of a municipal electric power plant.

FT. WORTH, TEX.—The Ft. Worth Well Machinery & Supply Co. has increased its capital stock from $60,000 to $100,000.

Business in Canada

BAGOTVILLE, ONT.—The town council will ask for bids at an early date for a power plant to cost $150,000.

FORD, ONT.—Merlo, Merlo & Ray, have awarded contract for a machine shop and garage to be erected here. Equipment has not been purchased.

LONDON, ONT.—The plant of the Ruggles Motor Co., here was damaged by fire.

Iron and Steel Prices

Iron Ore

LAKE SUPERIOR ORES
Per Gross Ton Lower Lake Ports

Old range Bessemer, 55 per cent iron	$5.95
Mesabi Bessemer, 55 per cent iron	5.70
Old Range nonbessemer, 51½ per cent iron	5.20
Mesabi nonbessemer, 51½ per cent iron	5.05

EASTERN LOCAL ORES
Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 53 to 63 per cent	9.50 to 10.50

FOREIGN IRON ORE
Cents per unit, c.i.f. Atlantic ports

Spanish low phosphorus, 52 to 54 per cent	9.00 to 10.00
Algerian low phosphorus, 52 to 54 per cent	10.00 to 11.00
Swedish and Norwegian low phosphorus, 68 per cent	11.00 to 11.50
Swedish foundry or basic, 68 per cent	9.00 to 9.50
Spanish foundry or basic, 52 to 54 per cent	8.00 to 9.00

Manganese Ore

Brazilian, minimum 47 per cent, 33 cents, c.i.f. Atlantic ports.
Indian, 48 to 50 per cent, 33 cents c.i.f. Atlantic ports, 35 cents per uni.t
Caucasian, 53 to 55 per cent, nominal.

Fluor Spar

85 and 5% grade

Washed gravel, Kentucky and Illinois mines, per ton	$21.50

Rivets

Structural rivets, Pittsburgh	3.00c
Boiler rivets, Pittsburgh	3.10c
Rivets, ⅞-inch and smaller	65 and 5 off

Nuts and Bolts

NUTS
(Up to 1¼ and 1½ inches inclusive)

Hot pressed square or hexagon blank or tapped	$3.25 to $3.50 off list
Cold punched square or hexagon blank or tapped	$3.25 to $3.50 off list
Cold punched semifinished hexagon nuts ⅜-inch and larger	70-10-2½ off
Cold punched semifinished hexagon nuts 9/16-inch and smaller	70-10-5 off
Cast hardened, finished, hexagon	65-5 off

Price f.o.b. Pittsburgh, Packages of 50.

CARRIAGE BOLTS
¾ x 6 inches, smaller and shorter

Rolled thread	50-10-5 off
Cut thread	50 off
Larger and longer	50 off

MACHINE BOLTS
(¾ x 4 inches, hot pressed nuts)

Rolled thread	60-5 off
Cut thread	50-10 off
Larger and longer	50-10 off
(¾ x 4 inches, cold punched nuts)	
Cut thread	45 off
Larger and longer	45 off
Lag screws	50-10 off
Ploy bolts Nos. 1, 2 and 3 heads	50-5 off
Tap bolts	30 off
Bolt ends with hot pressed nuts	50-10 off
Bolt ends with cold punched nuts	45 off
Blank bolts	50-10 off
Rough stud bolts with nuts	45 off

WASHERS

Wrought washers	$5.75 off list

Steel Pipe

Pittsburgh basing discounts, jobbers, carload

	Black	Galvanized
Butt Weld		
⅛-inch	47	21½
¼ and ⅜-inch	53	27½
½-inch	58	44½
¾-inch	62	50½
1 to 3-inch	64	52½
Lap Weld		
2-inch	57	45½
2½ to 6-inch	61	49½
7 to 8-inch	58	45½
9 to 12-inch	57	44½
REAMED AND DRIFTED		
Butt Weld		
1 to 3-inch	62	50½
Lap Weld		
2-inch	55	43½
2½ to 6-inch	59	47½
EXTRA STRONG—PLAIN ENDS		
Butt Weld		
⅛-inch	43	26½
¼ and ⅜-inch	49	32½
½-inch	55	44½
¾-inch	60	49½
1 to 1½-inch	62	51½
2 to 3-inch	63	52½
Lap Weld		
2-inch	55	44½
2½ to 4-inch	59	48½
4½ to 6-inch	58	47½
7 to 8-inch	54	41½
9 to 12-inch	48	35½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	44	34½
¾ to 1½-inch	47	37½
2 to 2½-inch	49	39½
Lap Weld		
2-inch	43	34½
2½ to 4-inch	45	36½
4½ to 6-inch	44	35½
7 to 8-inch	40	27½

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers, carloads

	Black	Galvanized
THREADS AND COUPLINGS		
Butt Weld		
¼ and ⅜-inch	+11	+39
½-inch	22	2
¾-inch	28	11
1 to 1½-inch	30	13
Lap Weld		
1¼ and 1½-inch	Upon application	7
2-inch	23	11
2½ to 6-inch	26	13
3 to 6-inch	28	11
7 to 12-inch	26	
PLUGGED AND REAMED		
Two points less than above		
EXTRA STRONG, PLAIN ENDS		
Butt Weld		
¼ and ⅜-inch	+19	+54
½-inch	21	7
¾-inch	28	12
1 to 1½-inch	30	14
Lap Weld		
2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
9 to 12-inch	16	2

DOUBLE EXTRA STRONG

Butt Weld		
½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39
Lap Weld		
2 and 2½-inch	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	..

Boiler Tubes

L. C. L. discounts. C. L. 4 points larger

STEEL	
1¼-inch	17½ off
2 and ¼-inch	20 off
2½ to 3-inch	40 off
3¼ to 4-inch	45 off
CHARCOAL IRON	
1½-inch	+16
1¾-inch	+ 6
2 and 2¼-inch	4
2½ to 3-inch	9
3¼ to 4½-inch	11
SEAMLESS COLD DRAWN	
1-inch	51
1¼ and 1½-inch	43
1¾-inch	27
2 and 2¼-inch	27
2½ and 2¾-inch	31
3-inch	35
3¼ to 4-inch	40
4½ and 5-inch	32
SEAMLESS HOT ROLLED	
3-inch	37
3¼ to 4-inch	42

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per net ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts

Carbon, 0.10 to 0.20 per cent	85 off
Carbon, 0.30 to 0.40 per cent	83 off
Carbon, 0.40 to 0.50 per cent	82 off

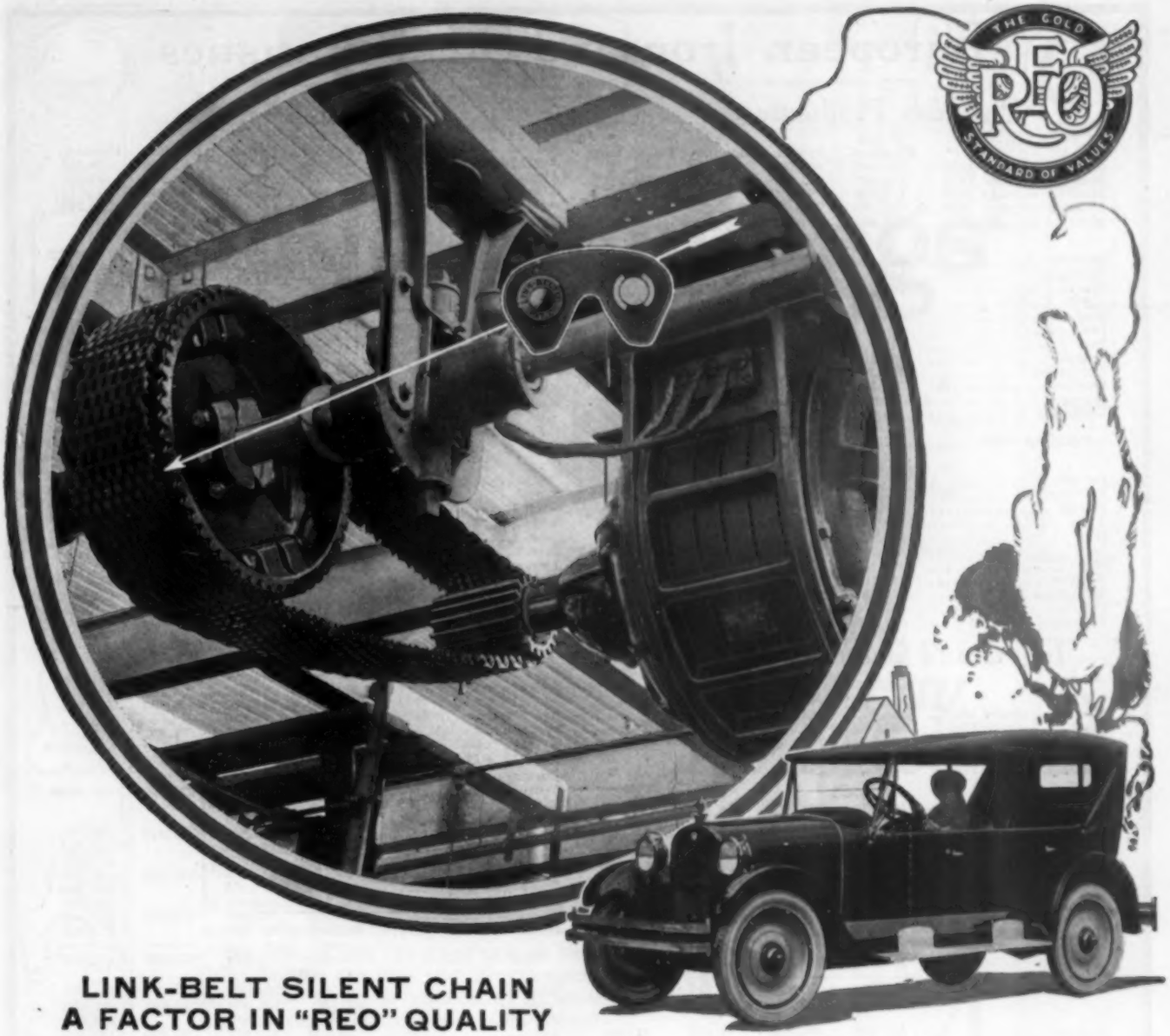
Plus usual differentials and extras for cutting.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Net prices per foot, f.o.b. Pittsburgh

Outside diameter	Gage	Price
2-inch	12-gage	14c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	19c
3-inch	7-gage	34c
1½-inch	9-gage	13 1/4c
5¾-inch	9-gage	53c
5½-inch	9-gage	55c

Plus usual extras for forming and for long lengths.



LINK-BELT SILENT CHAIN A FACTOR IN "REO" QUALITY

THE shafting throughout the Reo plant is driven with Link-Belt Silent Chain. In other words, the power is chained to the shafting. Every revolution of the motor produces its effect on the shafting.

There is no slip as with belting. There is no power loss. The drive on machines is steady and uniform. "Chattering" tools are practically a thing of the past. The work is improved. The output is increased. Quality is maintained to the fullest extent.

Most motor car manufacturers use Link-Belt Silent Chain Drives in their plants, because a first-class product is the dominant requirement.

Your product may be anything from hair-pins to locomotives. If you have power driven machinery, your transmission problems are very much alike. We have solved such problems for thousands, although each thought his was "different". Let our experienced power transmission engineers look over your plant and make recommendations.

Send for 128-page price list data book No. 125.

LINK-BELT COMPANY

CHICAGO

1045 INDIANAPOLIS

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New York - - Woolworth Bldg. Wilkes-Barre - - 24 Nat'l Bank Bldg. Seattle - - 829 First Avenue, S. Louisville, Ky. - Frederick Wehle, Starks Bldg.
Boston 9 - - 49 Federal St. Huntington, W. Va. Robson-Prichard Bldg. Portland, Ore. - - - 101 First St. New Orleans - C. O. Hinz, 804 Carondelet Bldg.
Pittsburgh - - 1501 Park Bldg. Cleveland - - - 429 Kirby Bldg. San Francisco - - - 168 Second Street Birmingham, Ala. - -
St. Louis - Central Nat'l Bank Bldg. Detroit - - 4210 Woodward Ave. Los Angeles - - 163 N. Los Angeles St. - S. L. Morrow, 720 Brown-Marx Bldg.
Buffalo - 547 Ellicott Square Kansas City, Mo. - - 306 Rinehart Bldg. Denver - Lindroth, Shubart & Co., Boston Bldg. Charlotte, N. C. - J. S. Cothran, Com'l Bank Bldg.

Canadian Link-Belt Co., Ltd., Toronto and Montreal H. W. CALDWELL & SON CO., CHICAGO NEW YORK, Woolworth Bldg. DALLAS, TEXAS, 700 Main St.

LINK-BELT

European Iron and Steel Statistics

Gross Tons

Pig Iron Production

	United Kingdom	France	Belgium	Luxemburg
Monthly average 1912..	729,000	405,000	192,000	184,800
Monthly average 1913..	855,000	427,000	203,800	209,000
Monthly average 1919..	617,000	198,000	20,600	50,000
Monthly average 1920..	667,300	281,700	62,700	58,000
Monthly average 1921..	217,600	280,300	71,800	79,600
1921				
January	642,100	288,000	110,600	93,500
February	463,600	287,400	103,700	81,700
March	386,000	295,300	104,700	27,600
April	60,300	287,700	94,700	70,800
May	13,600	278,100	74,600	78,700
June	800	280,900	67,400	81,700
July	10,200	2o2,400	44,600	70,000
August	94,200	250,800	43,800	72,800
September	158,300	239,800	59,800	86,200
October	235,500	251,800	45,800	98,800
November	271,800	290,000	59,800	92,400
December	275,000	296,300	73,000	100,800
Total for 1921.....	2,611,400	3,308,500	862,500	955,000
1922				
January	288,000	307,000	92,700	99,900
February	300,100	318,000	90,300	95,200
March	389,800	370,000	116,500	130,900
April	394,300	377,300	112,000	128,800
May	407,900	435,300	117,100	139,300
June	369,200	409,300	113,100	141,500
July	399,100	421,400	125,200	147,800
August	411,700	440,400	151,500	147,800
September	430,300	454,600	160,600	149,400
October	481,500	495,600	172,000	162,600
November	493,900	.....	.....	151,300

Ingots and Castings Production

	United Kingdom	France	Belgium	Luxemburg
Monthly average 1912..	566,000	363,000	206,000	79,400
Monthly average 1913..	639,000	385,000	202,300	109,000
Monthly average 1919..	658,000	179,000	27,400	32,000
Monthly average 1920..	754,700	250,200	101,300	49,000
Monthly average 1921..	302,100	254,500	65,000	62,300
1921				
January	493,400	263,700	119,100	70,800
February	483,500	259,600	98,400	62,000
March	359,100	246,900	96,300	19,700
April	70,600	252,600	108,700	57,100
May	5,700	240,400	62,800	56,100
June	2,700	240,800	54,200	61,000
July	117,200	219,500	26,900	57,100
August	434,100	228,600	27,800	55,100
September	429,300	232,100	34,000	76,200
October	405,400	255,900	41,900	81,800
November	443,800	272,700	46,200	69,900
December	381,000	297,600	63,200	80,700
Total for 1921.....	3,625,800	3,010,400	779,500	747,500
1922				
January	327,500	309,000	78,400	75,600
February	418,800	311,800	82,700	75,100
March	549,400	361,200	104,000	99,200
April	404,200	319,300	95,200	98,100
May	462,300	358,100	116,500	112,200
June	400,200	352,500	111,300	121,600
July	473,100	362,900	112,500	125,600
August	528,400	390,300	149,100	129,200
September	555,900	400,300	154,900	132,600
October	565,200	423,000	179,600	136,800
November	600,800	.....	.....	130,200

Imports

	United Kingdom	France	Belgium	Germany
Average monthly 1912..	166,400	16,400	87,000	27,300
Average monthly 1913..	185,900	12,900	68,900	25,000
Average monthly 1919..	42,400	113,100	44,400	.....
Average monthly 1920..	92,400	89,000	67,000	26,200
Average monthly 1921..	137,100	38,500	43,300	.....
1921				
January	157,800	44,200		
February	153,400	35,400	120,100	125,000*
March	156,100	33,900		
April	102,100	26,100		
May	81,900	31,700	95,500	36,000
June	84,500	20,700		42,100
July	103,600	30,300		45,100
August	141,500	16,100	130,600	61,200
September	206,100	27,900		79,800
October	172,800	19,800		96,600
November	169,200	20,700	168,000	54,300
December	117,000	128,000		56,300
Total for 1921.....	1,646,000	434,800	514,200	596,400*
1922				
January	88,700	36,600		68,200
February	64,600	55,800	139,000	66,900
March	63,800	67,300		105,700
April	59,900	89,100	32,400	129,000
May	60,900	41,100	62,400	154,300
June	52,800	73,200		137,200
July	55,900	54,800		182,900
August	80,100	40,300	129,700	181,800
September	70,600	50,000		175,000
October	90,600	109,200	.....	233,800
November	79,800	.....	.....	.....

Exports

	United Kingdom	France	Belgium	Germany
Average monthly 1912..	400,600	41,500	124,500	482,400
Average monthly 1913..	414,100	48,200	128,800	516,900
Average monthly 1919..	186,100	19,400	14,500	.....
Average monthly 1920..	270,900	74,600	74,300	143,600
Average monthly 1921..	141,700	132,700	75,900	176,000
1921				
January	232,400	89,300		
February	166,900	125,800	294,000	503,600*
March	148,900	122,700		
April	160,100	117,400		.....
May	99,000	96,900	241,300	127,800
June	64,700	109,100		159,700
July	64,000	87,600		175,000
August	76,500	122,500	192,300	236,300
September	133,300	171,200		221,800
October	155,800	188,300		242,300
November	193,500	167,400	176,000	230,600
December	205,300	131,700		212,900
Total for 1921.....	1,700,400	1,529,900	903,600	2,110,000*
1922				
January	235,300	164,000		218,200
February	223,400	107,000	198,400	170,000
March	295,800	72,300		208,700
April	258,400	125,800	83,900	195,500
May	272,400	122,200	279,600	204,500
June	236,300	180,300		209,132
July	251,700	182,100		206,200
August	270,000	168,400	522,600	181,300
September	279,200	174,000		223,500
October	347,100	235,600	.....	229,900
November	372,300	.....	.....	.....

Note—Belgian figures include Luxemburg since June 1, 1922.

*Provisional estimate. Export and import figures do not include scrap.

American Iron and Steel Exports and Imports

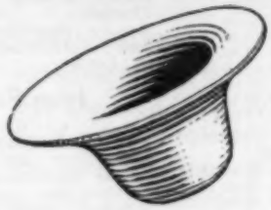
Gross Tons

	Imports	Exports
1922		
August	32,010	144,264
July	44,384	156,392
June	24,101	216,298
May	17,292	229,616
April	15,884	197,562
March	8,612	206,474
February	10,216	133,333
January	10,511	155,822
1921		
December	9,400	134,348
November	9,296	125,492
October	10,609	106,466
September	11,743	94,650
August	8,069	75,641
July	10,040	85,520
June	8,260	119,021
May	10,915	140,987
April	4,847	160,921
March	14,492	210,451
February	3,650	387,900
January	15,784	516,447
Total	117,105	2,156,818

1920		
December	15,120	499,780
November	50,995	434,290
October	39,797	451,972
September	31,825	408,605
August	58,335	431,519
July	32,742	419,230
June	40,549	392,780
May	29,125	419,064
April	29,681	395,583
March	38,377	426,448
February	36,491	308,128
January	45,796	333,514
Total	448,833	4,920,913
1919		
December	39,806	254,780
November	43,826	336,994
October	40,698	302,459
September	43,567	363,531
August	28,987	396,743
July	28,258	287,685
June	21,056	561,020
May	17,885	422,282
April	16,560	396,813
March	17,632	367,224
February	12,302	344,180
January	16,913	371,570
Total	327,490	4,405,281
1918	168,225	5,372,424
1917	324,565	6,442,240
1916	310,891	5,947,646
1915	282,396	3,532,564
1914	289,775	1,349,554
1913	317,260	2,745,635
1912	225,072	2,947,596
1911	262,457	2,187,725
1910	510,730	1,537,943
1909	363,984	1,243,583
1908	205,845	964,242
1907	662,358	1,301,981
1906	577,809	1,325,740
1905	416,000	1,010,255
1904	266,398	1,167,674
1903	1,178,797	326,590
1902	1,212,484	411,915
1901	221,297	81,211
1900	209,955	286,687

Budd Stampings

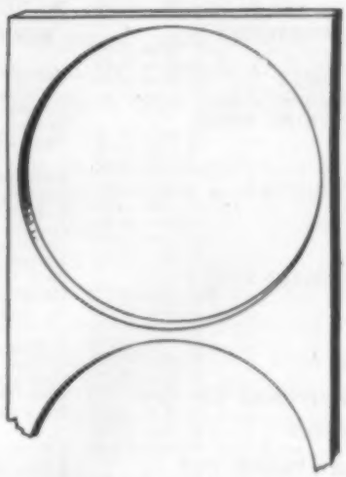
When You Want This



Scrap loss is one of the big expenses of stamping. In the example shown on this page the scrap loss was approximately 30%. This 30% was paid for at the price of ***new*** material—but its value as scrap was practically nothing.

For many years this condition has been tolerated as a necessary evil—

Don't Pay for This!



but the BUDD *Specialty Department* refused to be imposed upon by such a useless waste—it has developed methods that eliminate scrap loss, thus making it possible to quote prices on your stamping requirements, based upon the cost of the material actually used!

We have a large and very efficient die department thoroughly experienced in every line of die design which so skillfully designs the dies and directs operations that scrap is reduced to so small a percentage that it deserves no consideration.

If you should desire an estimate on stampings, just send us samples or drawings—and you will receive prompt and careful attention.

ADDRESS

SPECIALTY DEPARTMENT

EDW. G. BUDD MFG. CO.

Makers of All-Steel Automobile Bodies

PHILADELPHIA, PA.

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	$15.00 to 16.00
Boston (dealers)	16.00 to 17.00
Chicago	19.50 to 19.75
Buffalo	21.50 to 22.00
Cleveland	21.25 to 21.50
Cincinnati	19.00 to 19.50
Detroit (dealers)	19.00 to 20.00
Eastern Pennsylvania	20.50 to 21.00
New York (dealers)	17.25 to 17.75
Pittsburgh	23.50 to 24.00
San Francisco	14.00
St. Louis	19.50 to 20.00
Valleys	24.01 to 24.50
No. 1 railroad steel New York (dealers)	18.00 to 18.50

BUNDLED SHEETS

Buffalo	$15.50 to 16.25
Cleveland	**14.00 to 15.00**
Cincinnati	13.50 to 14.00
Detroit	16.00 to 17.00
Eastern Pennsylvania	18.50 to 19.00
Pittsburgh	20.00 to 20.50
St. Louis	**12.25 to 12.75**
Valleys	19.50 to 20.00

STEEL RAILS, SHORT

Birmingham	$22.00 to 23.00
Boston (dealers)	16.00 to 17.00
Chicago	23.25 to 23.75
Cincinnati	23.00
Cleveland	20.00 to 20.50
St. Louis	22.50 to 23.00

STOVE PLATE

Birmingham	$19.00 to 20.00
Boston (consumers)	17.00 to 18.00
Buffalo	**19.00 to 19.75**
Chicago	22.25 to 22.75
Cincinnati (net)	15.00 to 16.00
Cleveland	19.00 to 20.00
Detroit (net tons) (dealers)	17.00 to 18.00
Eastern Pennsylvania	19.00 to 19.50
New York (dealers)	17.00 to 17.50
Pittsburgh	17.50 to 18.00
St. Louis	21.00 to 21.50

LOW PHOSPHORUS

Buffalo	$24.50 to 25.00
Cincinnati	19.00 to 19.50
Eastern Pennsylvania	25.00 to 26.00
Pitts. billet and bloom crops	27.50 to 28.00

SHOVELING STEEL

Chicago	19.00 to 19.50
Pittsburgh	18.50 to 19.00
St. Louis	19.00 to 19.50

KNUCKLES, COUPLERS & SPRINGS

Chicago	26.00 to 26.50
Eastern Pennsylvania	25.00 to 26.00
Pittsburgh	26.00 to 26.50
St. Louis	27.00 to 27.50

COMPRESSED SHEETS

Buffalo	**$19.50 to 20.25**
Chicago	17.00 to 17.50
Pittsburgh	22.00 to 22.50
Cleveland	18.75 to 19.25
Detroit (dealers)	17.00 to 18.00
Valleys	21.00 to 21.50

FROGS, SWITCHES, GUARDS

Chicago	19.25 to 19.75
Eastern Pennsylvania	20.50 to 21.00
St. Louis	21.00 to 21.50

BOILER PLATE, CUT

St. Louis (dealers)	$15.00 to 15.50

ANGLE BARS—STEEL

Chicago	22.00 to 22.50
St. Louis	**19.00 to 19.50**

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	$20.00 to 21.00
Boston (dealers)	17.00 to 17.50
Buffalo	19.50 to 20.00
Chicago, No. 1	20.50 to 21.00
Chicago, No. 2	19.25 to 19.75
Cincinnati No. 1	17.00 to 17.50
Cleveland, No. 1	**12.00 to 12.25**
Eastern Pennsylvania, No. 1	**23.00 to 23.50**
Pittsburgh No. 1	22.00 to 22.50
Pittsburgh, No. 2	23.50 to 24.00
New York, No. 1 (dealers)	20.00 to 21.00
St. Louis, No. 1	20.00 to 20.50
St. Louis, No. 2	19.50 to 20.00

WROUGHT PIPE

Boston (dealers)	13.50 to 14.00
Buffalo	17.50 to 18.00
Eastern Pennsylvania	18.50 to 19.50
New York (dealers)	15.00 to 15.50

YARD WROUGHT

Boston	$15.00 to 15.50
Eastern Pennsylvania	20.00 to 21.00

CITY WROUGHT

New York, long	$18.00 to 19.00

BUSHELING

Buffalo, No. 1	**$19.50 to 20.25**
Chicago, No. 1	18.50 to 19.00
Chicago, No. 2	13.25 to 13.75
Cincinnati No. 1	17.00 to 17.50
Cleveland, No. 1	17.25 to 17.50
Cleveland, No. 2	15.00 to 16.00
Detroit, No. 1	15.00 to 16.00
Detroit, No. 2 (new)	14.00 to 15.00
Detroit, No. 2 (old)	12.00 to 13.00
Eastern Pennsylvania, No. 1	17.50 to 18.00
Pittsburgh, No. 1	20.00 to 20.50
St. Louis, No. 1	18.00 to 18.50

MACHINE SHOP TURNINGS

Birmingham	$11.00 to 12.00
Boston (dealers)	13.00 to 13.50
Buffalo	15.75 to 16.25
Chicago	14.50 to 15.00
Cleveland	16.50 to 16.75
Cincinnati (net)	12.50 to 13.00
Detroit (dealers)	13.75 to 14.00
Eastern Pennsylvania	18.00 to 18.50
New York (dealers)	15.00 to 15.50
Pittsburgh	18.50 to 19.00
St. Louis	12.50 to 13.00
Valleys	17.00 to 17.50

CAST IRON BORINGS

Birmingham (Chemical)	16.00 to 16.50
Birmingham, borings (plain)	11.00 to 12.00
Boston (chemical)	19.00 to 20.00
Boston (dealers)	14.00 to 15.00
Buffalo	**17.50 to 18.00**
Chicago	16.25 to 16.75
Cincinnati (net)	13.50 to 14.00
Cleveland	18.00 to 18.50
Detroit (dealers)	15.00 to 15.50
Eastern Pennsylvania	17.50 to 18.50
Eastern Pennsylvania (chemical)	23.00 to 24.00
Pittsburgh	20.00 to 20.50
New York (dealers' price)	15.50 to 16.00
St. Louis	**14.00 to 14.50**
Valleys	18.75 to 19.25

MIXED BORINGS AND TURNINGS
(For blast furnace use)

Boston (dealers)	13.00 to 13.50
Cleveland	17.50 to 18.00
Detroit (dealers)	**14.00 to 14.50**
Eastern Pennsylvania	17.50 to 18.00
New York (dealers)	14.50 to 15.00

IRON AXLES

Birmingham	23.00 to 25.00
Boston	**27.00 to 28.00**
Buffalo	**24.00 to 25.00**
Chicago	30.00 to 30.50
Cincinnati	26.00 to 27.00
Eastern Pennsylvania	28.00 to 30.00
New York (dealers)	29.00 to 30.00
Pittsburgh	34.00 to 35.00
St. Louis	31.50 to 32.00

IRON RAILS

Buffalo	**$19.75 to 20.25**
Chicago	24.50 to 25.00
Cincinnati	18.00 to 19.00
Cleveland	18.50 to 19.00
St. Louis	**22.00 to 22.50**

PIPES AND FLUES

Chicago	15.50 to 16.00
Cincinnati	13.50 to 14.00
Cleveland	17.00 to 17.50
St. Louis	15.00 to 15.50

RAILROAD GRATE BARS

Buffalo	$19.00 to 19.50
Chicago	21.50 to 22.00
Cleveland	**18.00 to 18.50**
Eastern Pennsylvania	19.00 to 19.50
New York (dealers)	16.50 to 17.00
St. Louis	19.00 to 19.50

FORGE FLASHINGS

Boston (dealers)	13.50 to 14.00
Chicago, small	15.50 to 16.00
Cleveland	16.75 to 17.00
Cleveland, large	15.50 to 16.00
Detroit (Dealers)	16.00 to 16.50

FORGE SCRAP

Boston	13.50 to 14.00
Chicago	19.25 to 19.75
Eastern Pennsylvania	19.00 to 20.00

ARCH BARS AND TRANSOMS

Chicago	27.50 to 28.00
St. Louis	26.50 to 27.00

ANGLE BARS—IRON

Chicago	27.50 to 28.00
St. Louis	26.50 to 27.00

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	**$14.00 to 14.50**
Buffalo	$20.00 to $20.50
Chicago	17.50 to 18.00
Cleveland	18.50 to 19.00
Eastern Pennsylvania	19.00 to 20.00
Pittsburgh	21.00 to 21.50
St. Louis	16.00 to 16.50

STEEL CAR AXLES

Birmingham	$22.00 to 23.00
Boston (dealers)	24.00 to 25.00
Buffalo	**23.00 to 24.00**
Chicago	24.50 to 25.00
Cleveland	23.50 to 25.00
Eastern Pennsylvania	**24.00 to 25.00**
New York (dealers)	21.00 to 22.00
Pittsburgh	25.00 to 25.50
St. Louis	27.50 to 28.00

SHAFTING

Boston (dealers)	$24.00 to 25.00
Chicago	25.50 to 26.00
Eastern Pennsylvania	24.00 to 25.00
New York (dealers)	19.00 to 19.50
St. Louis	22.50 to 23.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, tram car	22.00 to 24.00
Birmingham iron	22.00 to 23.00
Boston (consumers)	**20.00 to 21.00**
Buffalo, iron	**22.00 to 22.75**
Chicago, iron	26.50 to 27.00
Cincinnati	20.00 to 21.00
Eastern Pennsylvania, cupola	25.00 to 26.00
New York, iron (dealers)	21.50 to 22.00
Pittsburgh, iron	25.00 to 25.50
Pittsburgh, steel	26.00 to 26.50
St. Louis, iron	27.50 to 28.00

NO. 1 CAST SCRAP

Birmingham cupola	$22.00 to 24.00
Boston (consumers)	23.00 to 24.00
Buffalo	24.00 to 25.00
Chicago, cupola	25.00 to 25.50
Cincinnati, No. 1, machinery, cupola (net)	21.50 to 22.00
Cleveland, cupola	23.50 to 24.50
Detroit (net ton) dealers)	22.00 to 23.00
Eastern Pennsylvania, cupola	24.00 to 25.00
New York, cupola (dealers)	21.00 to 21.50
Pittsburgh, cupola	24.50 to 25.00
San Francisco	26.00 to 27.00
St. Louis, agricultural	23.50 to 24.00
St. Louis, railroad	23.50 to 24.00
Valleys	23.00 to 24.00

HEAVY CAST

Boston (consumers)	$19.50 to 20.00
Buffalo	21.00 to 21.50
Cleveland	17.00 to 18.00
Detroit automobile (net ton)	27.00 to 28.00
Eastern Pennsylvania	22.00 to 23.00
New York (dealers)	19.50 to 20.00
Pittsburgh	22.50 to 23.00

MALLEABLE

Boston (railroad)	$21.50 to 22.00
Buffalo	23.00 to 23.50
Chicago, railroad	25.50 to 26.00
Chicago, agricultural	25.50 to 26.00
Cincinnati, agricultural	19.50 to 20.00
Cincinnati, railroad	21.00 to 22.00
Cleveland, agricultural	22.50 to 23.00
Cleveland, railroad, nominal	23.50 to 24.00
Detroit (dealers)	21.00 to 21.50
Eastern Pennsylvania, railroad	20.00 to 21.00
Pittsburgh, railroad	25.50 to 26.00
St. Louis, agricultural	23.00 to 23.50
St. Louis, railroad	23.50 to 24.00

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	21.50 to 22.00
Boston (dealers)	**16.50 to 17.00**
Chicago	21.50 to 22.00
Cleveland	23.00 to 24.00
Eastern Pennsylvania	24.00 to 25.00
New York (dealers)	20.00 to 20.50
Pittsburgh district	25.00 to 25.50
St. Louis	22.25 to 22.75

LOCOMOTIVE TIRES

Chicago	23.50 to 24.00
St. Louis	22.00 to 22.50

LOW PHOSPHORUS PUNCHINGS

Chicago	22.50 to 23.00
Eastern Pennsylvania	**22.00 to 24.00**
Pittsburgh	27.00 to 27.50